COMPENDIUM

OF

CATTLE MEDICINE,

OR

PRACTICAL OBSERVATIONS

ON THE

DISORDERS OF CATTLE

AND THE OTHER DOMESTIC ANIMALS;

EXCEPT

THE HORSE.

WITH

A SERIES OF ESSAYS

ON THE

STRUCTURE, ECONOMY, AND DISEASES

OF

HORNED CATTLE AND SHEEP,

As communicated to the Bath and West of England Society.

BY JAMES WHITE,

Late Veterinary Surgeon of the First or Royal Dragoons

BEING A FOURTH VOLUME

Of his "Treatise on Veterinary Medicine."

VENIENTI OCCURRITE MORBO.

LONDON:

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN;
BALDWIN, CRADOCK, AND JOY; SHERWOOD, NEELY, AND
JONES; T. TEGG; AND SIMPKIN AND MARSHALL,

1821.

C. Baldwin, Printer,
New Bridge-street, London.

DEDICATION.

TO

CAPTAIN ILBERT,

OF HORSEWELL-HOUSE, KINGS-BRIDGE.

SIR,

THE first edition of a Treatise on Cattle Medicine, which I wrote some time ago, was dedicated by permission to you, because you had pointed out a deficiency in my first volume, or Compendium of Veterinary Medicine, which that volume afforded me an opportunity of supplying. This attempt to improve the treatment of the diseases of cattle, was so favourably received, as to pass through Two Editions in a short time. In the last Dedication, your name was mis-spelt by the printer, and the error remained unknown to me until it was too late to be rectified. Permit me, therefore, to dedicate this book to you, which I hope you will read and approve of.

I am, Sir,
With great respect and esteem,
Your most obedient Servant,
JAMES WHITE.

PREFACE.

My imperfect attempt to do something for the improvement of cattle medicine, met with so favourable a reception, that I have considered it as a duty I owed to an indulgent public, to continue my attention to the subject, and devote to it a considerable portion of my time. To accomplish the important duty I had undertaken, of improving the state of cattle medicine, I have been residing for nearly four years in a situation where many large dairies are kept, and where there are kennels, to which dead cattle are often brought. This has afforded me ample opportunity of attending to the diseases of milch cows in particular, and of examining their bodies after death. I have been in a situation, also, where many flocks of sheep are kept, and have had opportunities of seeing a great deal of their disorders. To the disorders of working oxen, and such as are fattening, I have also paid attention, and hope that the observations I shall make on those subjects will be found in some measure new, and altogether useful. I have also made some observations on the subject of vaccination, which I trust will not be found irrelevant, but, on the contrary, useful and important. I have likewise offered some remarks on the diseases of swine,—a subject that has hitherto been much neglected, though one of considerable moment. The disorders of dogs may be deemed of minor importance, but great loss is often sustained, especially in kennels, by one to which these animals are subject, named distemper: I have, therefore, pointed out a method of treating it, which, if employed early, will, I trust, always be found effectual. Those of cats may be thought not worth notice; but as the animal is useful in a certain degree, its disorders should be attended to. The book will conclude with a consideration of the diseases of these animals, and those of poultry. I have endeavoured to compress the subject as much as possible, and hope that nothing superfluous will be observed; but conciseness, however desirable, is not always compatible with perspicuity, or a clear understanding of the subject. If, therefore, I have dwelt a little upon some things which appeared of more consequence than others, the reason, I trust, will be obvious. The milch cow, for example, is of far greater importance to society, than any other animal, except the horse, and the structure and economy of her digestive organs are peculiarly worthy of attention. I have proved that the udder, after a certain period, ceases to be a gland, as it is commonly supposed to be, and becomes a receptacle for milk, which is formed in the fourth stomach. This discovery has led to others of greater importance, and has enabled me to give such a description of the internal disorders of the cow, as will lead not only to their cure, but likewise to their prevention. The Essays which form the Appendix, will be found, I hope, both useful and amusing, by all those who are desirous of improving the treatment of cattle, and ameliorating their condition. It is the same with cattle as in horses, as I have remarked in the Preface of my second volume, namely, it is for the interest of all proprietors to treat them with humanity.

"*A righteous man regardeth the life of his beast.*"—Prov. xii. 10.

A man of kindness to his beast is kind,
But brutal actions show a brutal mind;
Remember he, who made thee made the brute,
Who gave thee speech and reason form'd him mute;
He can't complain: but God's omniscient eye
Beholds thy cruelty—HE hears his cry;
He was design'd thy servant and thy drudge;
But know that his Creator is thy Judge.

Bath Herald of March 31, 1821.

*** *Mr. White may be consulted on the diseases of horses and cattle, at Wells during the winter; and at Oak-hill, near Wells, during the summer. He gives advice on the diseases of cattle gratuitously. His fee for a consultation on the diseases of horses is Five Shillings.—All letters must be post paid.*

Oak-hill, near Bath, June 1821.

CONTENTS.

Page
INTRODUCTION 1

DISEASES OF THE COW.

CHAP. I.—STRUCTURE AND ECONOMY OF THE DIGESTIVE ORGANS OF THE COW... 7

CHAP. II.—DISEASES OF THE DIGESTIVE ORGANS OF THE COW, COMMONLY NAMED HOVEN, BLOWN, BLASTED, &c........ 11

CHAP. III.—CHRONIC INDIGESTION 24

CHAP. IV.—YELLOWS 30

CHAP. V.—RED WATER 33

CHAP. VI.—DIARRHŒA, SCOURING, SCANTERING, &c. 40

CHAP. VII.—FOG SICKNESS, GORGED, CHOKING 44

Page
CHAP. VIII.—STAGGERS, VERTIGO, LETHARGY, SWIMMING OF THE HEAD; OR MORE PROPERLY, PARTIAL OR TOTAL PARALYSIS OF THE STOMACH 46
CHAP. IX.—LOSS OF THE CUD 48
CHAP. X.—MOOR ILL, WOOD EVIL, CLUE BOUND, FARDELL BOUND, PANTAS, &c. 51
CHAP. XI.——CHRONIC RHEUMATISM, CHINE FELON, AND JOINT FELON 53
CHAP. XII.—JOINT YELLOWS, OR TAIL ROT 54
CHAP. XIII.—LOSS OF THE MILK, BAD MILK, AND DISEASES OF THE UDDER 57
CHAP. XIV.—ABSCESS OF THE UDDER 59
CHAP. XV.—FLATULENT CHOLIC, GRIPES, OR FRET 61
CHAP. XVI.—FEVERS, OR INFLAMMATORY DISORDERS 62
CHAP. XVII.—FEVER, GENERAL INFLAMMATION, QUARTER-ILL, OR EVIL, BLACK QUARTER, BLOOD STRIKING, &c...... 63
CHAP. XVIII.—INFLAMMATION OF THE BRAIN, PHRENZY, MAD STAGGERS 67

Page

CHAP. XIX.—INFLAMMATION OF THE LUNGS, PERIPNEUMONY, AND PLEURISY. 69

CHAP. XX.—CATARRH, COLD, CATARRHAL FEVER, DISTEMPER, EPIDEMIC CATARRH, AND INFLUENZA 71

CHAP. XXI.—INFLAMMATION OF THE STOMACH 74

CHAP. XXII.—INFLAMMATION OF THE HEART 78

CHAP. XXIII.—INFLAMMATION OF THE BOWELS 79

CHAP. XXIV.—INFLAMMATION OF THE KIDNEYS......................... 82

CHAP. XXV.—STOPPAGE OF WATER, RETENTION AND SUPPRESSION OF URINE, STRANGURY, &C..................... 84

CHAP. XXVI.—INFLAMMATION OF THE WOMB, OR, CALF BED, PUERPERAL FEVER, MILK FEVER 86

CHAP. XXVII.—SLIPPING CALF, SLINKING, ABORTION 88

CHAP. XXVIII.—LOCKED JAW 89

CHAP. XXIX.—WOUNDS 90

Page
CHAP. XXX.—STRAINS AND BRUISES .. 93

CHAP. XXXI.—FOUL IN THE FOOT, LOO, OR LOW 94

CHAP. XXXII.—SUPPLEMENTARY REMARKS ON THE DISEASES OF THE COW . 99

Angle Berries and Warts 100
Consumption, or Atrophy 100
Nervous Disorders 101
Loss of Milk 102
Mange 102
Lice in Cattle 104
Warbles, Proof Worms, &c 105

DISORDERS OF CALVES. 106

Inflammatory Diseases 110

DISEASES OF SHEEP. 112

Hydrocephalus, Dropsy of the Brain, Giddiness, Goggles, Sturdy, Turnsick, &c. 113
Bursting, or Blasting, or the Blast 116
Goggles 117
Rot, Blaine, or Bain 118

Page
Foot Rot 123
Flux, or Scouring in Sheep 125
The Blood, or Blood Striking in Sheep 125
Braxy, Dry Braxy, Water Braxy, Bowel Sickness 126
Scab 127
Catarrhal Affections, Hoose, Cough, Distemper 128
Worm in the Horn, or Frontal Sinuses 129

DISEASES OF LAMBS. 131

DISEASES OF SWINE. 133

Cutaneous Disorders, Eruptive Disorders, or Disorders of the Skin Swine Pox, Measles, &c. 134
Purging Powder for Pigs 135

DISEASES OF DOGS.

Distemper 137
Asthma 140
Cholic, or Gripes 141
Cough 141
Diarrhœa, or Looseness 142
Dropsy 142

Page
Fits 143
Worms 144
Mange 146
Diseases of the Eyes 147
Strains 148
Costiveness 148
Inflammation of the Bowels 149
Sore Claws 149
Inflamed Lungs 150
Inflamed Stomach 150
Injuries of the Mouth from swallowing Bones 150

DISEASES OF POULTRY. 152

GENERAL OBSERVATIONS ON FATTENING CATTLE, AND OTHER DOMESTIC ANIMALS, USED AS FOOD 154

BLEEDING 162

DRENCHES 166

CLYSTERS 170

PROBANG 172

FOMENTATIONS 173

Page
PREFACE TO THE ESSAYS 177

ESSAY I.—INFLAMMATION OF THE LUNGS IN SHEEP 183

ESSAY II.—ON RED WATER 187

ESSAY III.—ON THE QUARTER ILL, OR QUARTER EVIL 194

ESSAY IV.—ON FEEDING WITH OATS 198

ESSAY V.—ON THE DISEASES OF CALVES 202

ESSAY VI.—ON HYDROCEPHALUS, OR GIDDINESS IN SHEEP 206

ESSAY VII.—A GENERAL DESCRIPTION OF THE DISEASES OF CATTLE 215

ESSAY VIII.—ON THE DISEASE TERMED MINDERING 227

ADVERTISEMENT.

An excellent set of Fleams has been contrived by Mr. Clarke, Cutler, &c. York Buildings, Bath, containing four bits: one for cattle and waggon horses; another for hackney horses; a third for sheep; and a fourth for dogs; all fitted to one shank, of the best form, and in a convenient case.

PUBLIC
LIBRARY
1859

A
COMPENDIUM
OF
CATTLE MEDICINE.

INTRODUCTION.

NO one can be competent to prescribe for cattle without a careful examination of the sick animal, and an accurate notice of the symptoms of the disorder, and the effects of his treatment. It is too much the practice for druggists to dispense medicine to cattle without seeing the patient, or without having ever seen an animal labouring under a similar disorder. They are, in general, totally ignorant of the subject: and their only pretensions are the possession of certain receipts for certain disorders, which they never saw, and perhaps never wished to see. Every farmer may easily make himself competent to prescribe for his own cattle, and ought to do so. The few medicines that are necessary, he should keep, and I will endeavour to teach him how to use them. The few instruments that are required he should also keep, and I will point out to him what they are, and in what manner he should make use of them; but let him never attempt to prescribe for cattle without carefully examining the sick animal, if it be in his power to do so. All the important disorders of cows and oxen may be divided into three classes. The first is caused by feeding too greedily upon clover or common grass, especially in the fall of the year, when grass is abundant, and the mornings become frosty. The second class depends upon an accumulation of excrement in the third stomach, and a consequent derangement of the digestive system. The third class depends upon repletion of the blood-vessels. Disorders of the second class generally occur late in winter, or in spring; those of the third in summer; and those of the first, as I have before stated, in the autumn, after the wet weather has set in. At this period the grass becomes abundant, and less nutritious than in the spring and summer; and then the animal often loads his stomach, and becomes hoven, or blown, or what is called *fog sickness* takes place. When a cow becomes ill from an accumulation of food, or rather excrement, in the third stomach, there is costiveness, loss of appetite, loss of the cud, swelling of the udder, bad milk, and a variety of symptoms, which nothing but personal and careful observation can enable the farmer to distinguish. He will then find that they are all referable to one cause, which I have pointed out; and require only a simple treatment, which will be described. These diseases are very common at the time I have mentioned; and such are the diseases in which the drenches of cow-doctors and druggists are given without doing mischief, and sometimes with good effect. But in the inflammatory class of diseases their drenches are poisonous; and there is not one in a thousand that knows how to treat them, though the treatment is extremely simple. In these diseases, therefore, the animal generally dies. The symptoms of internal inflammation, or fever, are quick breathing, hot horns and ears, and clammy lips, the blood-vessels of the white of the eye distended or full, but seldom any redness of the internal surface of the eyelids, as in the inflammatory disorders of the horse, hanging of the head and ears, and dejection of countenance, quick and hard pulse, often exceeding one hundred in a minute. Now, in distinguishing inflammatory diseases, the season of the year, the kind of pasture they are in, the milk they have given, or the number of calves they have had, and their age, are circumstances that must always be taken into consideration. A young cow or heifer, for example, that has not been removed from her native climate, has a strength of constitution which in an old cow, that has had many calves, and especially if she has been what is called a free and good milker, is nearly worn out. The treatment, therefore, must be adapted to circumstances. A young healthy cow, affected with an inflammatory disorder, will bear the loss of two gallons of blood; but in cows of the latter description it will be necessary to bleed with caution. There is a period when it is adviseable to give up milking a cow; and this period is generally made known by a gradual obliteration of the quarters, as they are termed. This process generally begins in one quarter, and in a short time spreads to the other on the same side. Thus the process of obliteration is going on in one half of the udder at the same time. Cows at this age should be kept at grass, in short sweet pasture, which will give strength to the digestive organs, and enable them to acquire fat without danger of inflammatory disorders when they are turned into better grass, or put up for stall-feeding.

The fattening of calves and lambs is a subject of importance, and may be conducted with greater certainty than it now is, by careful attention to the state of the stomachs. When the cows' stomachs are disordered, the milk is bad, generally, in one quarter only. If the calf sucks this teat, his stomach becomes disordered in a degree proportionate to the bad quality of the milk. However good the milk may be, he will, if not prevented, often suck too much at a time, and thereby load the stomach; a repetition of this excess will establish a disorder in the calf's stomach. The same observation applies to lambs; but it should be observed, that the cow was evidently designed to furnish milk for man, as well as for her own young, and that this excess is more likely to happen to calves than to lambs. To fatten lambs early, that is, about Christmas, it has been found a good plan to confine them, and let them suck the ewes only twice a-day: but in the intervals they have barley or oatmeal placed before them, mixed with a small quantity of powdered chalk, to correct any acidity that may take place in the stomach. This plan has been practised with great success by Mr. Cooper, of the White Hart, Bath. With regard to the fattening of oxen, we should always attend to the state of the digestive organs, and bring them to a healthy state before they are put into good pasture. To accomplish this, they should be placed in a situation where the pasture is rather bare, that they may be obliged to feed slowly, and have sufficient exercise in obtaining their food. See Essay on Red Water. There are other circumstances to be attended to in the process of fattening cattle, and other domestic animals, that are employed for food, which will be noticed in a separate chapter.

CHAPTER I.

STRUCTURE AND ECONOMY OF THE DIGESTIVE ORGANS OF THE COW.

OF all the disorders of cattle, and other domestic animals, there are none of so much importance as those of the digestive organs. I shall therefore begin this treatise with a description of those organs in the Cow. The digestive organs of this animal are of the most curious structure, from the lips to the fourth stomach. The lips of the cow are constantly covered with moisture, which is not like perspiration or any excrementitious fluid, but resembles saliva, and answers a similar purpose. The tongue is the organ that collects and applies this richly elaborated fluid, which serves to moisten the morsel during rumination; facilitates swallowing, and by combining with the ruminating morsel, becomes a constituent part of milk and of chyle. The first stomach of the cow is of great capacity, and may be considered as being divided into two parts, or surfaces; the internal surface of the first resembling a wet sponge; and that of the other, the cells of a honeycomb. The first is the recipient of coarsely masticated food, and the second of water. They can, however, communicate with each other, or be shut up, as may be subservient to the necessities of the animal. They may communicate with the third and fourth stomach (for there are four stomachs in the cow) if the will of the animal be forced, and it be drenched with nauseous drugs, which those organs were never designed to receive. On this occasion the œsophagus or gullet, which is continued through the first two stomachs, and nearly between them to the third, is closed up, so as to form a complete tube or canal; whereas, when grossly masticated food is taken in, it is a mere shoot, or a section of a canal, and is closed only by the stimulus of necessity, as Mr. John Hunter has named it, or, in other words, by the animal's wants, or instinctive feelings. The water that is taken in is conveyed to the second, or cellular stomach, where it may be shut up until wanted; and from whence it may be let out when there is occasion for it, into the third or fourth stomach, or retained and absorbed into the circulation, independently of those stomachs. The grossly masticated food is returned gradually into the mouth, not by a motion resembling vomiting, but by a gently inverted motion of its muscular fibres. The food thus returned into the mouth is remasticated, and from time to time moistened by the saliva, prepared by the lips, as well as that supplied, as in other animals, by the parotid and sublingual glands; and when duly prepared, is conveyed through the œsophagus into the third or fourth stomach, as the necessities of the animal may require. The third stomach is of the most curious and elaborate structure; it consists of a strong muscular bag, which when filled is of a globular form; its internal surface has numerous plates or leaves attached to it, of unequal but uniform lengths; that is, one large and one small, and so on all around. These are so disposed, that they may be considered as beginning at the part where the food enters, and terminating at that where it communicates with the fourth stomach. This stomach, as well as the two former, is covered with cuticle, which renders it insensible in a certain degree. It is not so thick, however, as the cuticle of the upper part of the horse's stomach, and therefore more susceptible of impressions. As the internal surfaces of the two first stomachs are of peculiar construction, so is this; theirs is spongious and cellular, this is papillary, and for a certain purpose; enabling it to express the nutritive juices of the ruminated food more completely than it could otherwise do. This may be seen when that stomach has been obstructed; for then the food which it takes in, is by the stimulus of necessity before noticed, so compressed as to yield its nutritive juices, which are absorbed by the numerous papillæ on its surface; and if the animal dies in this state, the food is found pressed into hard, dry cakes, full of holes on both surfaces, or rather indentations of the papillæ. The third stomach, considered as a cavity or bag, is not very unlike the horse's stomach; but in the latter, the part where the œsophagus enters, and that where the gut begins, are more distant from each other than in the cow; and in the latter, the position of the third stomach, with respect to the œsophagus and fourth stomach, is lateral, and on the right side. The two mouths of this stomach are so near each other, and so constructed, that they can occasionally be drawn towards each other, and so applied, that the food can be immediately conveyed into the fourth stomach, without any communication with the other three. This happens when drenches are given, in order to get rid of them as quickly as possible. The fourth stomach is richly organized, and is the part in which the milk is completely formed; it is then taken up by the milk vessels, for this stomach may be considered as a complete bibulous surface, where these vessels are spread innumerably. They soon, however, converge and terminate in two trunks, which pass up through the diaphragm and the chest close to the spine, mount over the first rib, one on each side, then pass down under the great pectoral muscle, and under the tendon of the external oblique, and at length terminate in the udder on each side. Each of these milk vessels, after it appears externally to have entered the udder, divides into two branches, and each branch has a distinct receptacle, which in common language is named a quarter. The udder then is a receptacle for milk, and not a gland, as it has been supposed to be. This may be proved by opening what is commonly termed the milk vein, when the udder is full of milk; but this cannot be easily done. So important a part has been carefully guarded by a greater thickness of skin, and a more abundant covering of hair at the only part where it is in danger, and there it may be seen, when the udder is full, and distended with milk. Unlike veins it will be found to become smaller as it departs from the udder, and giving off no branches. It has valves like a vein, which open in the contrary direction to what they would if it were a vein. No farther proof is required, and it is hoped no other will be expected, to refute the prevailing opinion, with regard to the formation of milk in the cow's stomach, and to the office of the udder.*

In the third volume, I have ventured to offer some opinions respecting the offices of the different eminences of the brain, which are observable on laying open the lateral ventricles. I have there observed, that the parts named by anatomists corpora pyramidalia are the organs of vitality; giving origin to those nerves named the eighth pair, or par vagum, which are distributed to all the vital organs, but more especially to the stomach. The other eminences have their respective offices assigned to them, giving origin to the nerves of sense and feeling. The cerĕbellum is the organ of muscular motion, and the corpora striata the organ of sensation, sensation giving origin to the spinal marrow. The stomach being so richly supplied by the organ of vitality, is endued in an especial manner with the principle of life, and retains it longer than any part of the body. The stomach then may be considered both as a muscular and as a vital organ. In the former light, it may be considered as a strong muscular cavity, which, by its contractions, mixes up the different parts of the food, and by its vitality, produces that change in it, which is named digestion and chylification. If we view it in another light, we shall consider it as one continued bibulous surface, sucking up the chyle as it is formed, and conveying it by means of the milk-vessels to the four receptacles, which are named the quarter of the udder. There is another order of absorbent vessels in the stomach, and in the small intestines also, especially in the upper part, named lacteals, which ramify through the mesentery, and terminate in the thoracic duct, having previously passed through what are named the mesenteric glands; that is, for the most part, for some are seen going over their surface. These lacteals are subsidiary and occasional in their office, serving to convey chyle when the mesenteric glands are inflamed and obstructed. Chyle, as we find it in the lacteals, is exactly like milk in every respect, and is, in fact, the same thing. The fluid of the thoracic duct is different; it is semi-transparent, has always a little oil floating on it, and is now and then found mixed with a little blood, which probably falls into it after death, from the great vein in which it terminates. This depends on the valve of that part giving way, in consequence of death. Chyle and milk then are precisely the same thing; and in the cow there are three thoracic ducts, two going to the udder, and conveying milk, and one to a great vein near the heart, conveying that fluid from which the blood is formed. When the animal has young, the lactiferous vessels, for so the minute branches of the two former thoracic ducts should be named, have a predominant aptitude to absorb the chyle, and a sufficient quantity only is taken up by the chyliferous vessels going to the third thoracic duct to supply the heart. The chyle that is taken up by the latter order of vessels requires to be strained, or to undergo some change in the mesenteric glands, before it is fit for the formation of blood. The chyle, or milk, that is conveyed to the udder, when taken into the stomach of the calf, undergoes a change; it is gradually coagulated by an acid, formed in that organ for the purpose, before it is fit for the delicate lacteal vessels, and then undergoes another change, in passing through the mesenteric glands, before it is fit for blood. This explanation of the economy of the cow's stomach must be kept in view in the treatment of the animal's diseases; and it must be particularly recollected, that there are two distinct offices performed by the stomach, the one depending on its muscularity, the other on its vital power. When the animal, therefore, is fed upon food that contains scarcely any nutriment, which is the case with a great deal of the hay that is given them, the quantity taken in must be considerable, to compensate for the deficiency in nutriment, whereby the stomachs of the cow are distended, and consequently weakened. The exertions made by its muscular fibres to move about the food, and extract the little nutriment it contains, is another cause of weakness. In the cow, this is principally effected by the third stomach, which serves as a press for the fourth stomach, as well as a reservoir; and if we view the structure of that cavity, we shall find it admirably adapted to the purpose. Now when an animal has been fed in this manner a considerable time, the muscular power of the stomach must of course be greatly depressed. The vital power also must be diminished in energy; but so richly is the stomach supplied with this principle, that it is the last to be exhausted. When the animal then is turned out, after such feeding, during the winter, into moderately good pasture, the appetite and digestion are great, and the food, even if the grass is very bare, is comparatively exceedingly nutritious. The quantity of blood that is formed, therefore, is beyond the capacity of the blood-vessels; but the grass being bare, he gets sufficient exercise to prevent any ill effect. If, however, he is turned into richer pasture, where he can fill himself more quickly, and get, of course, less exercise, a train of inflammatory disorders must of necessity ensue from it, especially when the blood is rarefied by the hot sunny weather, which often occurs, for short periods, during the spring. Such disorders, however, are foolishly attributed to cold or chills, and stimulating, or rather poisonous, drenches are given for the purpose of curing them. When lambs are thus attacked, as they often are by frisking about in the hot sunny weather, they are left wholly to nature, and as they lose their appetites, they stand a chance of recovering, and sometimes do recover, especially if they happen to be bled, even in the moderate manner in which they are usually bled, that is, by making an incision in the alæ of the nostril, a very vascular part, or by cutting off part of the ear or the tail; but great numbers die, even though thus relieved, for no bleeding can afford adequate relief, with any degree of certainty, unless it be performed in the neck vein, as in the cow; and this it easily can be, both in the sheep and in the lamb. But cows stand a worse chance, for they generally fall under the care of the cattle-doctor, and are destroyed by his stimulating drenches. Thus we find that the disorders which prevail in spring, and the early part of summer, are those of the inflammatory kind, and may be distinguished and cured as I have described; and the foregoing observations are made to show how they may be prevented. The disorders of the winter, on the contrary, are those arising from accumulated food in the third stomach, and a depression of the muscular power of the different stomachs, which requires the temporary stimulus of cordials, and often the evacuating power of aloes, salt, and whey, and a diet of whey for a day or two afterwards. But this evacuating drench must never be given on such occasions without the addition of the anodyne carminative tincture, or, if that is not at hand, one table spoonful of laudanum, or tincture of opium. The view I have given will show also how this is to be prevented, and that is, by supplying the animal, and especially the milch cow, with better food, taking care, however, that on this, as well as on all other occasions, the change is brought about gradually, lest another train of disorders ensue, which, being of an inflammatory nature, and arising from too much blood being formed, are more speedily destructive than the other class of diseases, unless treated very differently from what they now commonly are; and it is hoped that what I have said here, as well as in the preface, though the repetition may appear tiresome, will, when joined to the practical observations contained in the following pages, do away with the foolish dread that has hitherto prevailed of bleeding to faintness, and has been the cause of an immense number of cattle being lost. *

---

* On examining the udder of a heifer that died after her first calving, I found that it was cellular only in some part, the rest being spongious, and yielding milk by pressure, and there was no milk vein to be found on either side of the belly. From this it may be inferred, I think, that the chyle or milk is conveyed to the udder by some ramification of the thoracic duct, and the cells of the udder, as well as the milk veins, are formed gradually.

I have found also, that the milk vessel or vein, as it is commonly named, becomes a blood-vessel, when the quarters are obliterated, or are no longer employed as receptacles for milk. In this instance the teat yielded matter, or pus, which gradually becomes thinner and thinner, and at this time resembles a mixture of whey and water, and is only in small quantity.

This fluid appears to me to be a secretion from the cells of the udder, for it has evidently no communication with the milk vein, which has now become a blood-vessel.

---

* In taking this general view of the disorders of the milch cow, I do not think it necessary to enter into an examination of the various degrees of derangement or depression of vital power which takes place in the digestive system, or in the constitution generally, by which the symptoms of disorders are greatly diversified. Each series of symptoms which constitute a disorder will be considered separately; and the general view will be found, I hope, a useful foundation, upon which the industrious practitioner may build a successful mode of prevention and cure.

CHAPTER II.

DISEASES OF THE DIGESTIVE ORGANS OF THE COW, COMMONLY NAMED HOVEN, BLOWN, BLASTED, &c.

Acute Indigestion of the First Stomach, Rumen, or Paunch.

THIS disorder occurs from the animal feeding greedily on pasture she is unaccustomed to, especially clover, and other artificial grasses. When this stomach becomes filled beyond its capacity, the food ferments, and it is so distended with air that rumination is completely put a stop to. When this happens, a severe degree of pain is produced. The breathing is so oppressed, that the lungs are prevented from receiving sufficient air, and if relief is not quickly afforded, the animal dies. The remedy usually employed is a flexible instrument,* which being passed into the stomach, the confined air rushes out, and the animal is, for the time, relieved. The stomach then recovers its energy, and gradually throws up the fermenting food, which the animal should not be allowed to ruminate, but have taken from his throat and mouth as soon as it gets there; unless this is done, the disorder is liable to return. If he is allowed to ruminate such food, and take it into the third stomach, that cavity having participated in the injury sustained by the first, it will remain there, and produce the disorder which I shall name chronic indigestion. After this accident, cow-leeches, or doctors, as they are now more commonly called, usually give some cordial drench; and if it be joined with opening medicine, as in the drench for red water, such drenches do good. After this, it is a good plan to turn them into a bare pasture, and let them remain there until the digestive system (for the whole of the organs participate in the injury in some degree) is completely restored. If, however, the pro-

---

* A patent instrument is sold for this purpose, by saddlers, in many parts of England. When this is not at hand, there is no difficulty in making an instrument for the purpose, by taking three small canes, each of them six feet long, and binding them together with waxed packthread. At one end there should be a ball of wood, about the size of a pigeon's egg, firmly secured. To in-

---

troduce this instrument into the stomach, the bullock's nose should be held out as nearly in a straight line as can be with the gullet, or throat; and when held firmly in this situation by an assistant, who grasps the partition of the nostrils with the fingers and thumb of his right hand, the operator can easily force the ball end into the stomach, and let out the confined air.

prietor prefers keeping the animal, and continuing the use of cordials, the following drench is the best

Cordial Drench.

Half a pint of mild ale, with one race of ginger grated into it.

This should be given twice a day, and continued, if necessary, three or four days. An animal that has suffered from this disorder must be fed with great care afterwards. A rather bare pasture affords the best diet for it, and if that cannot be had, bran mashes are the best thing that can be given it. A repetition of this accident is more dangerous, and more difficult to relieve, than the first, and so on in succession, until it becomes absolutely incurable; for the muscular power of this organ, as well as of every other, is limited, and there is a period when it can act no longer. This organ, like every other, derives its muscular power from the cerebellum, or little brain, as I have described in the first and third volumes, more especlally in the latter. When that is exhausted, the vital organ alone remains to supply the different parts of the body, and that is not sufficient to enable the rumen to perform its office; it then becomes paralized, but does not die. This constitutes a disorder in which the animal can be supported only by gruel. and in such a way, that it is better to destroy it at once. The disease is named staggers, or lethargy, from which, if it recover, it can be of no use, and had better be destroyed; for if supported by gruel, its flesh would not be worth the expense of his keep, and for milk it would be worth nothing.

Cattle, when stall-fed, as it is termed, that is, when kept tied up, are liable to indigestion, which sometimes proves fatal; and, from the information I have obtained, it appears to me that raw potatoes, and unbruised oats, or oats without chaff, are more liable to produce this effect than other food. It is probable, however, that potatoes would be found wholesome food if given more cautiously than they often are, or if boiled or steamed, and given with cut straw or chaff. When stall-fed cattle are thus affected, they are said to be blasted. The best remedy in this case is the following opening drink and clysters, composed of salt and water: one pound of salt to five or six quarts of water, (see article *clysters.*) The animal should be moved about a little, unless there is too much swelling and difficulty of breathing to admit of it. In such cases, and indeed on all occasions of this kind, it is advisable to take off some blood; and when the symptoms are urgent, and the head much affected, the quantity taken off should not be less than a gallon, or more, or until the head appears relieved. It would be proper also to introduce the flexible instrument noticed in the preceding chapter.

Carminative Drench.

Common salt	4 ounces
Powdered Barbadoes aloes	½ ounce
Powdered ginger	1 dram
Water	1 quart—Mix.
Anodyne carminative tincture	2 ounces—Mix.

As soon as the drench has been given throw up the clyster of salt and water. When cattle have been griped, or disordered in the stomach, by feeding on oats unbruised, and unmixed with chaff, I have seen this drench afford speedy relief, and have afterwards found a considerable quantity of oats in the dung that had scarcely undergone any change in their appearance. I have known a farmer lose three oxen by feeding them on potatoes when they were plenty, and probably given too freely.

CHAPTER III.

CHRONIC INDIGESTION.*

THE method of feeding cattle during the winter has a tendency to weaken the digestive system, and especially that of the milch cow. The best food for the animal, is that which the Almighty has provided for it, and when that cannot be obtained, the best substitute is good hay. The hay, however, commonly given is not good; on the contrary, a great deal of it is either of indifferent quality, or bad. Cows that are tied up during the winter are more liable to be

---

* In looking over books on cattle medicine, one may be led to believe, from the many disorders that are described in them (generally under very absurd names), that the disorders of cattle are very numerous. The truth is, however, that they are subject to very few internal disorders, a knowledge of which may be acquired without difficulty. The most simple, and the most useful manner of considering those disorders, is to divide them into two classes; that is, disorders from indigestion, or weakness of the stomachs or digestive system, and inflammatory disorders. According to Dr. Philip, in his treatise on indigestion, "A disease is not only that collection of symptoms which are present at any one time, but also those which appear in succession, arising from the same source. We shall find indigestion the most varied of all diseases; beginning from simple and apparently unimportant deviations from health, it gradually becomes so complicated, and often at length so undermines every power of the system, that it is difficult to give a view of its symptoms, which shall at once be suf-

ficiently full and distinct. It is an affection of the central part of a most complicated structure, capable of influencing even the remotest, and each through many channels, and in various ways." If we consider the subject in this plain and simple manner, there will be no difficulty in perceiving, that supposing the animal to be originally of a healthy constitution, the disorders of the digestive system, or stomach, are the consequences of improper feeding, assisted by the depressing influence of wet and cold weather. From this we shall be led to a conviction of the possibility of preventing those disorders by feeding the animal properly. It should be known, however, that sufficient attention is not paid to breeding. Whoever is desirous of having healthy stock, should take care that both the bull and the cow are of a sound constitution, and of a proper age. Many farmers send their heifers to bull at one or two years, which is one or two years too early. By such premature breeding, the heifer's constitution is considerably weakened, and her stock participates more or less in the weakness. And whenever the constitution is weak, it is most felt in the digestive organs. Another cause of weakness is the removing the young animal from his native climate, and especially by removing him to one that is colder. As to inflammatory disorders, the cause, the remedy, and means of prevention, are sufficiently obvious, and have already been sufficiently noticed. See Introduction.

injured by this mode of feeding, than such as are kept out; they have often, however, this compensation,—they are sheltered from the wet and cold, and generally have better hay given them than cattle that are kept out during the winter. These have the advantage of exercise, and some proportion of green food, during great part of the winter, and are thereby enabled to digest bad hay better than cows that are kept tied up. The injury which this does to the stomachs, or digestive system, takes place gradually, and when the spring returns, and the cow is turned into fresh pasture, the constitution gains strength, and the digestive power is renovated or improved. A return to the same food in the winter weakens the digestive system still more, and the renovation which takes place during the following spring and summer is less complete, and takes place more slowly. Weakness of the digestive system causes weakness of the whole body. The degree of weakness thus produced in the stomachs, and in the constitution, generally depends upon circumstances, which should be taken into consideration. Cows that are of a hardy constitution resist the influence of improper feeding and want of exercise better than such as are rather weakly, or that have been brought from a warm to a colder climate, or from a poor soil, to one that has been more recently cultivated; and there is something in change of soil more than this,—that is, a disorder is often produced by change of pasture, while the difference in the pasture has not been evident. But whenever such disorders take place, from changing cows from one pasture into another, when there is no observable difference between the two pastures, it appears to depend upon two circumstances, viz. a previous weakness of the digestive organs, and an increase of appetite and digestive power, arising from the change of food and situation. The previous weakness always depends on the winter's feeding. Bad hay abounds with fibres, and is deficient in nutritive matter; therefore, when ruminated, it is kept back in the third stomach, which serves as a press, and after the nutritive fluid has been pressed out into the fourth stomach, the fibrous parts are expelled and carried off through the bowels. In animals that have died of red water or scouring, we generally find an accumulation of hardened food, or rather excrement, for such it really is, between the leaves of the third stomach. These plates or cakes of hardened excrement appear to consist of the fibrous part of the hay matted or compressed together, and sometimes of the fibres of coarse grass, which the animal has picked up about the hedges or ditches. The muscular coat of the stomach appears tender, and the cuticular coat comes off, either wholly or partially, with the hardened excrement, the surface of which is covered with small holes, the indentations of the papillæ, or small eminences, with which the leaves of the third stomach are covered. In France, and other countries where they are fed almost wholly on green succulent food, those disorders are almost unknown, and the disorders that do occur, are of the inflammatory kind, arising from repletion of the blood-vessels. These often quickly degenerate into putridity, and can be arrested only by early and copious bleeding. While we are under the necessity of feeding cattle, during the winter, on hay, and cannot always obtain good hay, we should endeavour to lessen the evil as much as possible, and use the most effectual means of relieving them, as soon as any disorder appears. The early application of remedies is a matter of great importance, and it is to be regretted that this is so seldom attended to as we find it to be. It is too common a practice to pay no attention to the disorders of cattle, until they become confirmed or incurable, and then expensive and useless drenches are often employed. Chronic indigestion then depends upon diminished energy of the stomach, and the exciting cause of the disorder is an accumulation of fibrous matter in the third stomach, which greadually becomes weaker and weaker, while the fourth stomach and the whole constitution participate in the injury. Another cause of disorder in the digestive system of the cow is frequent distension of the first stomach, commonly named paunch, rumen, or belly; when this happens, rumination becomes more or less difficult. In this case also, the other stomachs participate more or less in the disease. So important is the office of the stomach, especially in the milch cow, that whenever the digestive function is impaired, the whole body is more or less affected. Exposure to wet and cold weather depresses the powers of the constitution, and in this case the digestive system becomes weakened, and is rendered more liable to disorder. The grinding teeth sometimes are injured by the stalks of docks or bramble, mixed with the hay, which renders mastication difficult and imperfect, and this may become a cause of indigestion. A certain degree of weakness in the stomachs will induce a disordered state of the bowels, and sometimes of the kidneys and udder.

The various morbid changes that take place in cattle, from the causes above stated, may be classed under the general head of Chronic Indigestion, and will be described under the following heads, viz: Yellows, Chill, Red Water, Scouring, Diseases of the Udder.

CHAPTER IV.

YELLOWS.

This disorder often occurs to cattle, and especially to milch cows, and consists in a disordered state of the third and fourth stomach, and sometimes of the first also, in which case the animal ceases to chew the cud. The symptoms of yellows are, yellowish and stringy milk, generally from one quarter only, and that quarter is hard, rather swollen, and tender.

This disorder may take place in different degrees. Sometimes it is but slight, and only observed by the altered appearance of the milk; at others the quarter is much swollen, and the milk is changed into a fluid somewhat resembling matter, and smells offensively. In this degree of the disorder there is want of appetite, languid and dull appearance, and sometimes the animal ceases to chew the cud.

The following drench is the best remedy that can be employed; and if the disorder is not violent, nothing more will be required, except putting him into a field where there is but little grass. In more violent attacks of this disorder, the drench may be assisted by giving the animal whey every three or four hours, and throwing up a clyster. The swollen udder may have some neat's-foot oil, or olive oil, applied to it. When this disorder is neglected, or improperly treated, the udder sometimes bursts, and, after discharging matter for some time, a large fleshy fungus grows out from it, which remains for some time, and then gradually separates and falls off, while the sore which remains gradually heals. Sometimes the udder remains in a hardened condensed state, and becomes useless, or, in the language of dairymen, the quarter is lost. In the first attack of yellows let the following drench be given, and, if the weather is favourable, the cow should be turned into a field where there is but little pasture, and where she may drink freely.

Opening Drench for Yellows.

Common salt	4 ounces
Barbadoes aloes	½ ounce
Ginger	1 dram
Water	1 quart
Anodyne carminative tincture	2 ounces

Mix for one drench.

Anodyne Carminative Tincture.

Take of the best Turkey opium	1 ounce
Cloves bruised	1 ounce
Best Jamaica ginger, bruised	1 ounce
Best Cogniac brandy	1 quart

—Mix. Let them stand together in a well-corked bottle, which must be frequently shaken for three or four weeks, and it will be fit for use. At this period it may be strained off through blotting paper.

CHAPTER V.

RED WATER.

THIS is a disorder which occurs often, and not unfrequently proves fatal. It appears to depend on a relaxation of the vessels of the kidneys, which, instead of admitting urine only to pass through them, yield or give way when there is an unusual determination of blood to them, and suffer blood also to pass as well as the urine. This being the case, it becomes necessary to enquire on what this relaxation of the urinary vessels depends; and, after a careful examination, I am of opinion that it originates in weakness of the stomach, induced by feeding on bad hay during the winter. In cows that have died of this disorder we almost always find an accumulation of the fibrous parts of hay in the third, or foliated, stomach, compressed into thin cakes, and matted together. The cuticular coat of the leaves of the stomach generally separates with those cakes of matted fibres, and the muscular coat is found weakened and distended. *

From the universality of this appearance in cows that die of red water, there cannot be a doubt, that the remote cause or origin of the red

---

* See Essays.

water is weakness of the stomachs or digestive system, and improper feeding during the winter. Hay that is of indifferent or bad quality not only weakens the stomachs, but affords impure chyle, and, consequently, impure blood. The impurities, or excrementitious parts of the blood, are carried off by the kidneys; and when these are abundant, the urinary vessels are gradually relaxed or weakened; so that when an unusual quantity of blood is formed by a change of food in the spring they suffer blood to pass off with the urine, and sometimes so copiously that the animal bleeds to death. We find, however, some variety in the symptoms of this disorder. Sometimes the bleeding is inconsiderable, and the disorder of the stomachs and bowels is the predominant symptom, and one which requires attention. At others, the bleeding is so great that the vessels burst, or are broken down, and then the urine becomes brown and turbid, and even approaching to blackness. Some land is remarkable for giving cows the red water; and from the circumstance, I believe, of the animal eating the grass of such land with greater appetite, and digesting it more quickly: hence the quantity of blood formed will soon be so great as to bring on general or partial inflammation, or force its way through the urinary vessels. This kind of pasture also gives such energy to the weakened stomachs, that the matted cakes that have accumulated between the leaves of the third stomach are forced off; and, for the promotion of this object, there is such thirst in the animal that she drinks as much water as is necessary for the purpose. From this circumstance red water is often accompanied with a looseness of the bowels, the excrement being often discharged with considerable force, but in a small stream, and nearly as thin as water, often mixed with hard knobs, consisting of the accumulated matter from the third stomach: sometimes they are of such size as to plug up the fundament, and prevent the free discharge of excrement; in which case it is necessary to throw up a clyster, or remove the clots with the finger. As soon as this is done, the fluid excrement passes off freely, unless stopped by other clots. There is another kind of red water, produced by blows on the loins, or by other cattle ramping upon them; and this is not accompanied by the looseness above described, or falling off of the appetite, which in the other red water is diminished, or even lost. This is generally named strain water, or red water from blows or bruises, whereas that which forms the subject of the present chapter has been named red water from indigestion. But when the bleeding from the kidneys is the principal symptom, and the stomachs and bowels are not materially affected, it has been named the inflammatory red water. This distinction must always be kept in view, and carefully attended to, as the two kinds of red water require a different treatment. The red water from indigestion is commonly met with in cows that have weakly constitutions, or such as have been good milkers, or that have had many calves; but the inflammatory red water most commonly happens to young steers and working oxen, when first put in for fattening. The disorder most frequently happens in the spring of the year, but sometimes it occurs in the summer. The first thing to be done is to clear the third stomach from hardened matter or excrement that is lodged in it; for which purpose one of the following drenches may be given:—

Drench for Red Water.—No. 1.

Take of Barbadoes aloes	½ ounce
Common salt	4 ounces
Ginger	1 dram
Water	1 quart
Anodyne carminative tincture	2 ounces

And if this tincture is not at hand, half an ounce, or one table spoonful, of tincture of opium or laudanum may be substituted for it. The receipt for the anodyne carminative tincture may be found in the preceding chapter. One of these drenches is generally sufficient, provided the animal is drenched with two or three quarts of whey three or four times a day, and if the weather is favourable she should be kept in a field where there is but little grass. If the cow or steer is hot and feverish, that is, if the horns are hot, the nose dry and hot, the breathing quick and disturbed, a sufficient quantity of blood should be taken off to remove those symptoms. Sometimes a considerable quantity of blood must be taken off, even until the animal is faint, and then the drench No. 2. which does not contain opium, is most proper. The drench No. 1. is intended for cows whose digestive system has been much weakened; for in such cases there is so much debility in the stomachs that salt and aloes may do harm, unless some energy were given to the stomachs by the cordial property of ginger and tincture of opium, or, what is much better, the anodyne carminative tincture.

It should be recollected, that if we succeed in removing the hardened excrement from the third stomach, and in putting a stop to the discharge of blood with the urine, or, as it is commonly termed, in *turning the water*, the digestive system or stomachs will remain in a weakened state, and therefore some attention will be required with respect to the animal's diet. The best situation is a field where the grass is short and sweet, and where she may have sufficient exercise in obtaining a proper quantity of food. The same situation is most fit for a beast that has had the inflammatory red water, for here both the digestive system and the kidneys will be gradually restored to health.

Drench for Red Water.—No. 2.

Take of Epsom salt from 6 to 8 ounces
Water .... 1 pint, or more
Castor or olive oil ...... 6 to 8 ounces.—Mix.

Farmers sometimes substitute cream, or half-made butter, with the whey in it, for the castor or olive oil, and four ounces of common salt for the Epsom salt; and when the medicine does not operate freely it should be assisted by drenching the animal with whey. Epsom salt, however, is milder than common salt, and castor oil or olive is preferable to cream or butter. If aloes and ginger are not at hand, and cannot be obtained in time for the red water from indigestion, that is, for the red water in cows with weakened stomachs, that have had several calves, and have been good milkers, the common salt should be given in a little larger dose; and if no laudanum, or anodyne carminative tincture, can be procured, a wine glass full of brandy or gin may be substituted, and a tea-spoonful of flour of mustard. I would advise every farmer, however, to keep the anodyne carminative tincture, and a mixture of powdered Barbadoes aloes and ginger, in the proportion of four ounces of aloes to one ounce of ginger. This I would name compound powder of aloes. The drench No. 1. is the best for chills, yellows, bad milk, and other disorders of common occurrence, that can be given; therefore all farmers and dairymen would do well in being always provided with the ingredients for making it.

It is a circumstance much to be regretted, that the use of bad hay for cows is so general in many parts of England, that we seldom meet with dairies where the cows are not more or less injured by the winter's feeding. Inattention with respect to breeding, and change of climate, or putting the animal into an unsuitable climate, are circumstances that contribute to the production of diseases among cattle. By reflecting on this we shall be led to the prevention of such diseases, which, on all occasions, will be found much easier than curing them.

CHAPTER VI.

DIARRHŒA, SCOURING, SCANTERING, &c.

THIS is a disorder that happens more frequently than red water, and I believe more frequently proves fatal, or is only partially remedied, so that the animal is made very poor or indifferent beef. A permanent or radical cure is seldom obtained, perhaps for one or more of the following causes: 1st. The animal is not attended to, or properly treated, on the first appearance of the disorder. 2d. The animal is kept in an unfavourable situation, and fed improperly. 3d. The animal is of a weak constitution, either naturally, or from frequent calving and bad feeding.

If the disorder is attended to, and properly treated on its first occurrence, and the animal is of a tolerably sound constitution, I believe it may be permanently cured by giving, in the first place, the drench No. 1. prescribed for red water, and every evening and morning afterwards the cordial astringent drench. The red water drench should be given early in the morning, and if the weather is favourable, the animal should be turned into a field where the pasture is short. On the evening of the same day the cordial astringent drench should be given, and if the weather is wet and cold she should be placed in a sheltered situation. The drench should be continued three or four days after the scouring has ceased, that is, after the dung resembles that of healthy cows at grass. It is a common practice to keep a scouring cow in, and feed her with hay, barley-meal, &c. This hardens the dung, but does not cure the disorder; the stomachs and bowels continue weak, and the food serves but to oppress them. When the weather is wet and cold, and good grass cannot be procured for them, they should be kept on such food as the stomach is capable of digesting, and it should be given in small quantities only at a time. There is a fine kind of bran, called *pollard*, and a bran of another kind, named *gurgings*, which, given together, forms excellent food for them when kept within; and even at grass, if the medicine should not succeed, a small quantity of this food may be given them. It should always be recollected, however, that if the quality and quantity of the food is not suitable to the strength or state of the stomachs, instead of affording nutriment, it serves only to oppress and weaken them still further. If really good hay can be obtained, a moderate quantity should be given, but only a little at a time. The water that is given them within doors should not be very cold, and if a handful of wheat flour were stirred into each pailful it would be found useful.

But when this in-door treatment is adopted, the opening drench should always be given first, and followed by the cordial astringent drench, as before described in the treatment of cows at grass. It may be found useful, during the in-door treatment, to repeat the opening drench once in three or four weeks, and give three or four doses of the cordial astringent afterwards. The expense of this drench is so moderate, not exceeding threepence, that no reasonable objection can be made to giving it twice a day, and continuing it a short time. The practice of giving powerful astringents and stimulants is very injurious; they give temporary excitement and energy to the stomachs, which is always followed by depression. It should always be laid down as a principle, in regard to cordials and astringents, that the dose should never exceed the quantity that is capable of producing the desired effect. By repeating this moderate dose every morning and evening the strength of the stomachs is kept up, and they are enabled to perform their functions properly, so as to form good chyle, and consequently good blood. As the blood increases in purity, the muscular coat of the stomachs will acquire permanent strength; and so will the brain and nervous system. This constitutes the radical or permanent cure, and when this has been accomplished we should take care to avoid the causes by which the disorder is produced.

Cordial Astringent Drench.

Take of powdered catechu	2 drams
Fresh powdered allspice	2 drams
Fresh powdered carraways	½ ounce
Good strong beer or ale	half a pint
Table beer or water	half a pint

Let the ingredients be simmered for a few minutes in the table beer or water, and let the strong beer be added at the time the drench is given.

CHAPTER VII.

FOG SICKNESS. GORGED. CHOKING.

THIS disorder is very similar to that described in Chapter II. and has received a different name from the circumstance and period at which it occurs, that is, at the latter part of summer, after the rainy season, when the grass becomes abundant, and the frosty mornings begin. At this period the digestive system, as well as the whole body, has become rather weak, from the summer heat, and continuance of good feeding on rich summer grass. The appetite becomes irregular or morbid, and some cattle will eat voraciously; they then lie down, when the grass is covered with hoar frost; and this, with the coldness of the atmosphere, so depresses the strength of the stomachs, as well as of the whole body, that digestion is put a stop to. The body then swells, and the animal is in great pain, appearing stupid, and breathing with difficulty. The first thing to be done is to bleed freely, for at this period there is too much blood. After this, the instrument called a *probang* (see note to Chapter II. where this instrument is described), and the following drench given, unless the ingredients be at hand for making the drench No. 1. prescribed for red water, which is the best drench that can be given, and should be kept in house by every dairyman or proprietor of cattle.

Drench for Fog Sickness, when the Drench No. 1. cannot be obtained.

Take of common salt . . . . . . 4 to 6 ounces.
Flour of mustard, one table spoonful, or, if this is not at hand, a tea spoonful or two of ginger or pepper.
Water . . . . 1 quart.
Gin, one noggin, that is, four ounces by measure, or a quarter of a pint.

A clyster of salt and water is of use, and the beast should be made to walk, and when relieved, turned into a field where the grass is very short, that he may work hard for a bellyfull. This will gradually restore the strength of the digestive system. When the animal begins to ruminate, or throw up the fermenting grass from the rumen, or first stomach, it should be taken from his mouth, as it is unfit for being swallowed again. When the stomachs have been much weakened by this disorder, a few cordial drenches, of moderate strength, may be necessary; and the best, perhaps, that can be given is half a pint of good beer or ale, with a little ginger in it.

CHAPTER VIII.

STAGGERS, VERTIGO, LETHARGY, SWIMMING OF THE HEAD; OR, MORE PROPERLY, PARTIAL OR TOTAL PARALYSIS OF THE STOMACH.

THIS is the highest degree of disease of the digestive system, in which the muscular power of the stomachs have been so much exhausted, that they become incapable of contracting upon the food which the animal takes in; for though the appetite for food continues either from habit, or some other circumstance, it is so depraved, that the animal eats from the hedges and ditches the coarsest and most indigestible kind. The symptoms of this disorder are heaviness of the head, and sleepiness, the animal sometimes resting his head, or forcing it against a gate or hedge, and appearing sometimes nearly or quite insensible. This disease is often incurable, in consequence of the exhausted or paralytic state of the muscular coat of the stomach, while perhaps the vital power that remains in it, is the cause of the continuance of appetite, and of the animal loading it with improper food. The following drench should be given, and clysters of salt and water thrown up; for the stimulus given by the salt water to the nerves of the intestine will gradually spread to the stomach, because both the stomach and bowels are supplied by the nerves named par vagum. And at the same time they will remove the excrement that is lodged in the bowels.

Take of Barbadoes aloes 6 drams
Common salt, ... 6 ounces
Flour of mustard, ... 1 ounce
Water, 1 quart, mixed.

If the animal appears to be relieved by this drench and the clysters, he should be kept afterwards in a place where he cannot eat any thing improper, and take twice a day half a pint of good beer or ale, with a little ginger in it Bran mashes may perhaps be found proper food for them, with a little malt in them.

CHAPTER IX.

LOSS OF THE CUD.

When a cow ceases to chew the cud, or quid as it is commonly named, it is a sure sign that the stomachs are disordered: and most commonly it depends upon an accumulation of dry fibrous matter between the leaves of the third stomach. When this happens, the fourth stomach, and sometimes the bowels become disordered also. Loss of the cud may depend at first on a disease of the first stomach only, as is the case sometimes in animals that have been paunched, as it is termed, that is, have been stabbed with a sharp knife to let out the confined air, when the animal has been blasted, hoven, or blown. After this operation, an adhesion takes place between the first stomach and the side, at the part where the operation was performed; or, in the other words, the stomach sticks to the side, and rumination is in consequence more or less imperfect.

Rumination means that motion of the rumen, or first stomach, by which the food is forced back into the mouth to be perfectly masticated.

This motion is not sudden and painful, like that of vomiting, but gradual, gentle, and productive of cheerful feelings, when the animal is healthy and free from pain. By the adhesion before described, this gentle and gradual action of the first, or ruminating stomach, must be interrupted in some degree, and probably somewhat painful. Paunching, therefore, though it affords relief in some cases, is not so useful as introducing the probang, and letting out the confined air by the mouth, as described in Chapter II. As loss of the cud depends upon an accumulation of fibrous matter in the third stomach, and a consequent disordered state of the whole digestive system, the first thing to be done, is to give the following drench, or that prescribed for *red water*, and marked No. 1. This last drench is most fit for cattle of weak constitutions; for such as are old, and have been good milkers; and especially when the disorder takes place while they are fed on hay, or soon after they are turned into pasture in the spring of the year, But when there is quickness of breathing, hot horns, and other marks of fever or inflammation, the animal should be bled freely, and take the following drench.

Epsom or Glauber's salt, 6 to 8 oz.
Whey, one quart.—Mix.

After this has been given, let the animal be turned into a field, where the grass is short; and if the weather is wet, she should be kept in a sheltered barton, and fed with whey and bran mashes. If the disorder continues after this, a little ale with ginger may be given twice a day. When Epsom or Glauber's salt cannot be procured, common salt may be substituted for it, but it requires more dilution.

CHAPTER X.

MOOR ILL, WOOD EVIL, CLUE BOUND, FARDELL BOUND, PANTAS, &c. &c.

THESE disorders all belong to the same family, that is, weakness of the stomachs, or digestive system, brought on by feeding on unwholesome food during the winter, and accelerated or heightened by keeping the animals in a cold wet situation. In the low open country about Glastonbury, where bad hay is very plentiful, but ought to be good, these disorders are prevalent, and are known by a variety of names, among which is Moor-Ill, or Evil, because the country was formerly a moor or common, and very wet and exposed.

The drink No. 1, for *red water*, and a sheltered situation, are the best remedies; a few drenches of beer with ginger may afterwards be required, and then the animal should be kept in a sheltered field, where the grass is rather short but sweet. It is easy, however, to prevent these disorders, by making hay earlier than they do; for they would then have better hay, and better after-grass. They should also select the hardiest kind of stock for such situations, or breed their own, which is much better, because they would then be inured to the climate. The desire now so prevalent for improving the breed of cattle and sheep, by crossing, and by change of climate, will, I fear be productive of mischief. Sheep are greatly degenerated, and appear to be becoming weaker in their constitutions; and I think the same with regard to cattle.

CHAPTER XI.

CHRONIC RHEUMATISM, CHINE FELON, AND JOINT FELON.

THESE are diseases of the back or joints, attended with weakness and loss of flesh, brought on by feeding on bad hay or straw, and by the cold winds and the wet in the early part of spring. Let the beast be removed to a better situation; a sheltered field is the best; and if there is not sufficient grass, let there be bran mashes with a little malt, and a moderate quantity of good hay. The swollen joints should be well rubbed with neats'-foot oil; and the best drench that can be given is No. 1, prescribed for *red water*. Should it appear necessary, after this, to give any thing more, let half a pint of good beer with a little ginger be given morning and evening.

CHAPTER XII.

JOINT YELLOWS, OR TAIL ROT.

THIS is a consumptive disorder, often a consequence of, or an attendant on, that stage of scouring or scantering which is named the scouring rot. It arises from the same cause as the preceding disorder, and can be remedied only by change of situation and food, a warm sheltered field; or in cold wet weather, a warm barton or cow-house, with straw to lie down in, and bran mashes with a little malt, and a moderate quantity of good hay. An opening drench is always the best medicine that can be given at first, and afterwards half a pint of beer morning and evening, with a little ginger. But if there is scouring, then the cordial astringent drench prescribed for that disorder must be given. The symptom which causes this disorder to be called tail rot, is an inability to lift the tail in dunging and making water, in consequence of which the tail and hind parts become very filthy, or covered with dung, by the lateral motion of the tail. There is also tenderness upon the loins, and about the rump, and tightness of the skin covering those parts. From an opinion that there is a worm in the tail, which occasions all this mischief, cow doctors make an incision of two or three inches in that part of the tail where there is most weakness, or where the joint appears to be loosest. The sore in the tail in a day or two becomes painful, and induces the animal to take more pains to move it about; and the warm stimulating drenches that are given, with the improvement in keep, sometimes strengthens the muscles, which moves the tail, and moderates or stops the scouring. This cure, which is seldom more than temporary, is attributed to the removal of a worm in the tail, which had no existence but in the imagination of the cow doctor.

The only thing to be done when this symptom is observed, is to give the drench No. 1, prescribed for *red water*, and afterwards the cordial astringent drench, as directed for scouring; a sheltered field, or warm cow barton, or cow-house, according to the weather and season of the year, and a diet of bran mashes, with a little malt or gurgings, and a moderate quantity of the best hay, is all that can be done. It is to be regretted that proprietors of cattle should be so neglectful as they generally are of the means of preventing these disorders, and of the means of curing them on their first appearance. The first process is by far the easi est, and most profitable; the second is generally successful; but if the disorder is not attended to at this period, the expensive drenches commonly resorted to may protract the fatal termination, or produce a little improvement; and that is all they can do; nor can they do this, unless the animal is placed in a proper situation, and allowed wholesome food.

CHAPTER XIII.

LOSS OF THE MILK, BAD MILK, AND DISEASES OF THE UDDER.

Having in the beginning of the book described the structure and economy of the digestive system, the manner in which milk is formed, and the vessels by which it is conveyed to the udder, the reader will not be at a loss to account for the cow loosing her milk, yielding bad milk, or for that disease of the udder, or rather of one of the quarters of the udder, which is commonly named *udder-ill.* The milk is nothing more than chyle, and is formed in the fourth stomach. If digestion is imperfect, from a morbid state of the stomach, the chyle will be bad, and sometimes so acrimonious, as to inflame the receptacle, or quarter of the udder where it is conveyed. The chyle may be so acrimonious, as to excite such an action in the stomach as will throw it off into the bowels, or the food may pass off undigested, in which case there will be no milk formed. The milk may be gradually, or partially lost, by a gradual depravation of the chyle. The depraved, or bad chyle, may be passed into the blood, as well as into the milk vessels, and corrupt the whole mass of blood, producing thereby disorders in different parts of the body, as well as inflammation of the udder. Such is the disposition, however, of the blood vessels, that the acrimonious, or excrementitious parts of the blood, will be carried off by the kidneys, in which case the urine will be white and turbid, or high coloured and foul; hence we have the disease named white water, and one kind of *red water*, which would be more properly named brown, or black water. In all these disorders, the drench, No. 1, for *red water*, is the best remedy, and afterwards short and sweet grass, where the animal may have sufficient exercise in getting her food. This will gradually strengthen the stomachs, improve digestion and chylification, and purify the blood. The swollen udder, or rather that quarter of the udder which is affected (for there is seldom more than one affected at a time), should have the bad milk drawn from it three or four times a day, for by remaining in the quarter it would irritate and increase the inflammation. The only application necessary for the swollen udder, is neats'-foot oil, or olive oil, and when it is considerable, fomentation may also be made use of.

CHAPTER XIV.

ABSCESS OF THE UDDER.

WHEN the udder-ill is neglected, and especially when the bad milk is not drawn off, and improper medicine is given, pus, or matter, forms in the quarter, which, after some time, bursts. In this case, the wound sometimes gradually heals; at others, a fungus, or excrescence, sprouts from it, which is often of considerable size. This excrescence, however, if left to itself, gradually drops off, and remaining some time gradually heals. Sometimes the matter in the udder gradually drains off from, or accumulates in, the teat, which requires to be opened with a lancet. Another termination of this disorder is a gradual thickening, or hardening of the quarter, which ends in its total obliteration, and the recovery of the animal's health.

The most simple treatment is the best in this case. The cow should be kept at grass; and if there appears to be any disorder of the stomachs, the opening drench, No. 1, for *red water*, should be given. The udder may be kept clean, and that is all that is necessary, except a little oil, to keep off flies; and giving vent to the matter, by a lancet, from the udder or the teat, when it clearly appears to be necessary. This opening should be made towards the lower part, where the matter appears to point, as it will then flow off freely. In some cases, the inflammation of the udder terminates in a hard indolent swelling, and the cavity, or milk cells, are obliterated.

CHAPTER XV.

FLATULENT CHOLIC, GRIPES, OR FRET.

In this disorder the animal is in great pain, often lying down and getting up again; she turns round her head to her hind parts, and endeavours to strike her belly with her horns, or hind leg. There is no appetite. I have seen this disease brought on by feeding on unbruised oats alone. The opening drench for *red water*, No. 1, was given, and the cow, which had been kept tied up, was turned to grass, she had some whey given her also, and a clyster of salt and water.

A considerable quantity of oats was brought off with her dung, nearly unchanged, and the disorder was completely removed.

CHAPTER XVI.

FEVERS, OR INFLAMMATORY DISORDERS.

In the introductory chapter it has been observed that inflammatory diseases generally take place during the spring and summer, and that they depend on repletion of the blood vessels, and can only be cured by early and copious bleeding, opening medicine, and putting the animal into short or bare pasture. It is not so essential, as it is commonly supposed to be, to give a long and minute description of all the appearances or symptoms, or, in other words, of the disorders which arise from this source, because the same treatment is applicable to all; still there is some advantage to be derived from making some division in this section of the work, especially as it will be thereby rendered more familiar, and better suited to a large proportion of those persons for whose use this book is designed; that is, farmers and dairymen.

CHAPTER XVII.

FEVER, GENERAL INFLAMMATION, QUARTER-ILL, OR EVIL, BLACK QUARTER, BLOOD STRIKING, &c.

THIS disorder often proves fatal, and is so rapid in its progress, that it sometimes destroys the animal in a few hours. If observed early, I believe it may be generally cured by copious bleeding; that is, bleeding the animal until he becomes faint, and afterwards turning him into short pasture, and keeping him there for some time. Young cattle are most subject to this disorder, especially yearlings, and from that period till they are two years old. It may, however, occur after this, but with somewhat different symptoms.* Spring and summer is the time when the disease makes its appearance, and it generally comes on suddenly. The young animal appears stupid and listless, hangs the head and ears, and has little or no appetite; a swelling takes place in some part of the body, as on the legs, shoulders, under the belly, or on some part of the back. When these swellings are pressed, there is a crackling felt, as if air, with some fluid, were contained in them. The mouth and tongue are often blistered. Without early bleeding no medicine can do any good, and the only medicine required is eight or ten ounces of Epsom or Glauber's salt in a quart of whey or water. When there is no other medicine at hand, from four to six ounces of common salt may be given. The age at which this dangerous disorder attacks is that when the digestive system is vigorous, and the appetite strong, so that blood is quickly formed, and in greater quantity than is necessary for the wants of the body. The vital organs, that is, the brain, lungs, kidneys, &c. being all strong, and capable of making resist-

---

* In consequence of the improper manner in which cattle are generally fed (that is, the hay that is given them during the winter is generally bad and unwholesome), and the situations they are kept in being often exposed, and unsuited to the state of their constitutions or habits —the blood becomes impure, or loaded with excrementitious matter, or, in more familiar language, full of humours. These humours are constantly passing off by the bowels, and more especially by the kidneys, which, in

---

cattle and horses, are the great emunctories of the body. In consequence of this they become relaxed and weakened. If when they are put into fresh pasture their appetite and digestion become strong, and blood is too quickly formed, instead of general inflammation, or quarter ill, the superfluous blood will pass off by the kidneys, and the animal may bleed to death.—See Appendix, Essay on Red Water.

ance, the excess of blood operates upon the body generally; and unless the disorder thus produced is promptly subdued, it soon becomes putrid and malignant. Pestilential fever, or murrain, is precisely of this nature; and though commonly looked upon as a putrid disorder, is, at its commencement, highly inflammatory. The medicines usually prescribed, that is, tonics and antiseptics, can never do any good; it is only early bleeding, and bleeding to faintness, that can possibly save the animal.

When an animal dies of this disorder, that is, the *quarter-ill*, it should be buried immediately, as, by neglecting this precaution, a pestilential fever may be produced; that is, when the state of the atmosphere, and other circumstances, are unfavourable. I have known this happen in Somersetshire, and great loss was sustained in consequence; but providentially the fever did not spread far. Only one of the beasts that were attacked was cured, and that one only was bled to faintness; and bleeding, I believe, was the only remedy employed for it.

It requires but little reflection to be convinced that this disorder may, and always should be prevented, by not forcing young animals too much, but by keeping them in short or bare pasture. A common is the best situation for young growing animals. If they are kept in good pasture at that age, when the appetite and digestion are powerful, they should be carefully watched, and bled as soon as any of them appear dull and listless. Writers on cattle medicine recommend drenches and bleeding as preventives of this disorder; and there may, perhaps, be those who will prefer this to the more simple and effectual method of keeping them in a proper situation.

CHAPTER XVIII.

INFLAMMATION OF THE BRAIN, PHRENZY, MAD STAGGERS.

THIS disease is known by a furious delirium, or madness, which generally comes on gradually, and should be noticed when approaching. It arises from an excess of blood, which first causes heaviness or stupor, hanging down the head, &c., which gradually increasing, becomes delirium, or madness. The eyes appear inflamed, and sometimes fierce. After furious exertions, the animal sometimes falls down, and lies for some time either senseless or struggling. After a time, it gets up again, and appears more quiet, but the paroxysm soon returns, and terminates in death.* If the approach of the disorder is observed, it may be stopped by copious bleeding. (See *Bleeding.*) A purging drench may also be given, and the animal should be turned into bare pasture. If he is not observed until the paroxysm, or delirium, has taken place, there will be some difficulty in bleeding him;

---

* Inflammation of the brain is sometimes brought on by the cruel and dangerous practice of driving cattle, until they become furious, through the streets of London.

and when he is secured, both neck veins should be opened *as quickly* as possible; for by keeping the neck corded without opening the vein, we increase the quantity of blood in the vessels of the brain, and endanger their bursting.

No other remedies are required.

Purging Drench.

Take of Barbadoes aloes	½ ounce
Carbonate of potash	2 drams
Glauber's salt	6 ounces
Water	1 quart.—Mix.

CHAPTER XIX.

INFLAMMATION OF THE LUNGS, PERIPNEUMONY, AND PLEURISY.

A DISTINCTION has been usually made between pleurisy and peripneumony, the former being an inflammation of the pleura, or membrane, which covers the lungs, as well as the internal surface of the ribs, diaphragm, &c. (see vol. i. *Anatomy of the Internal Organs*); the latter, an inflammation of the substance of the lungs. This distinction is unnecessary; for wherever the inflammation begins, if it is not put a stop to by bleeding, it soon spreads. There is another disorder of the lungs, which consists in an inflammation of the membrane which lines the windpipe, and its innumerable branches. The name of this disorder is catarrh, or cold; and when existing in a higher degree, it has received a great variety of names, among which are, distemper, influenza, felon, &c. These high degrees of catarrh are attended by fever, and are sometimes contagious. Inflammation of the lungs, whether pleuritic or peripneumonic, will form the subject of this chapter; catarrh, and catarrhal fever, will be treated of in that which follows.

Inflammation of the lungs is most commonly brought on by driving cattle improperly when they are in good order, or fat. It is brought on also by keeping them too well, or feeding them too hastily. The symptoms are, quick breathing, which is seen by the quick motion of the flanks, dullness, and hanging of the head and ears, hot horns, especially towards the roots, nose hot and dry, loss of appetite, and a quick pulse. (See *Pulse.*) Nothing but early and copious bleeding can possibly save the animal; after which he may be turned into a field where there is but little for him to eat, and where he can be sheltered from the heat of the sun, or from cold and rain: or when this cannot be done, he may be kept in a barton, or cow-house, and fed sparingly on grass, bran [illegible], whey, and only a small quantity of the best hay; and in this last situation it will be proper to give him the saline opening drench, that is, six or eight ounces of Glauber's or Epsom salt; and if that cannot be had, four or five ounces of common salt. He must be kept very low until the disorder is completely removed, and then he should be got up again very gradually.

CHAPTER XX.

CATARRH, COLD, CATARRHAL FEVER, DISTEMPER, EPIDEMIC CATARRH, AND INFLUENZA.

THIS disorder prevails most in the spring of the year, when the wind is easterly, and the weather wet and cold. It is caused also by sudden changes from heat to cold, or the contrary; drinking freely of cold water, after being heated by exercise, or by being driven. Sometimes it comes on without any perceptible cause, and sometimes prevails in such a degree as to appear to be contagious. It is then called influenza, or distemper. The symptoms are, cough, hanging of the head and ears, diminution or loss of appetite, and quick pulse. (See *Pulse.*) They generally separate from their companions. There is generally, after a short time, a discharge from the nostrils, and sometimes soreness of the throat, and difficulty of swallowing. When these are the symptoms, there is great debility, and loss of flesh. The disease sometimes degenerates into consumption, scouring, and atrophy. Copious bleeding is the first remedy. The animal should be placed in a sheltered field, or good cow-house, or barton. A field, however, is the best situation, if the weather is at all favourable. If the animal is kept in a house, and there is no grass for it, bran mashes are the best food; and it will be proper to give six or eight ounces of Epsom salt in a quart of whey. If the disorder continues after this, small doses of nitre may be given in a little gruel. This disorder, though confined at first to the mucous membrane of the throat, nostrils, and windpipe, spreads to the whole substance of the lungs when improperly treated, or when the animal is exposed to wet and cold weather. The disease described in the preceding chapter originates in plethora, or fulness of the blood vessels, and increased action of the heart, in consequence of which too much blood is impelled into the vessels of the lungs. Catarrhal disorders depend more upon an impure state of the blood, occasioned by a suppression of those natural discharges by which the blood is depurated. These outlets being obstructed in some degree, the acrimonious humours are determined to the mucous membrane of the throat, nostrils, windpipe, and lungs, and sometimes to the mucous membrane of the bowels also. Bleeding is necessary to lessen the quantity of this impure blood, and thereby relieve the heart, and diminish its action, while the saline purgative determines the acrimonious humours to the bowels, and thereby relieves the lungs, which are of more importance, and more easily injured, than the mucous membrane of the bowels. The nitre, which is directed to be given afterwards, determines what remains of this noxious humour to the kidneys, and causes it to flow off with the urine. In both cases grass is the best food, and a sheltered field the best situation, when the weather is at all favourable; and when there is no grass, bran mashes, and a little of the best hay, are the best substitutes.

When catarrhal disorders prevail much, it is probable they are infectious; great care should therefore be taken in separating the sick from such as are healthy. Setons in the dewlap, and near the throat, may be employed when there is great difficulty in swallowing, or the throat may be blistered. When the difficulty and quickness of breathing continue after bleeding freely, the bleeding should be repeated.

CHAPTER XXI.

INFLAMMATION OF THE STOMACH.

This is a serious disorder, and happens more frequently than people are aware of; it takes place, however, in various degrees, causing a diversity of symptoms, but all of them bearing such a resemblance to each other as will enable the practitioner to discover their origin. A certain degree of inflammation in this important organ will cause such an alteration in the chyle, or milk, that when it arrives at the udder it will irritate and inflame it; and when the milk is drawn off, it will be found thin, yellowish, with small thread-like coagula, or, as it is termed, stringy. Sometimes it has an offensive smell, and even assumes the appearance of matter, and at others it has a reddish appearance, as if blood were mixed with it. (See *Diseases of the Udder.*)

Inflammation of the stomach may be produced by the animal taking too much food; in which case the digestive process is suspended, and then the food ferments, and a great quantity of air is extricated from it, which so distends the stomach as to inflame it. The bowel generally partakes of the inflammation.

This is different from the disease termed hoven, or blown, in which the rumen, or first stomach, is the part affected; for here it is the fourth, or milk stomach. Unwholesome food is the most common cause, especially bad hay, but it also happens sometimes in summer, when the animal is in good pasture, and in cows that have been good milkers. The symptoms are heaviness, dullness, and want of appetite. The lungs are generally more or less affected, which is known by the breathing being disturbed, and sometimes by the hoose, or cough, which attends it. Bleeding until the animal appears faint is the first remedy, especially when it happens while the animal is in good pasture, and she is fat, or in good order, and then a saline opening drench may be given, with the addition of a little castor oil.

When the disease occurs while the animal is fed on hay, there is generally, perhaps always, a collection of the fibrous parts of the hay, in a dry and compressed state, between the leaves of the third stomach, which must be dislodged before any relief can be expected. The following opening drench, and a clyster, should be given for this purpose, and the cow should be turned out for exercise in a sheltered field, or barton, and be fed very sparingly. Whey, or thin bran mashes, are perhaps the best food. When the season of the year, or other circumstances, prevent her being turned into a field where the pasture is bare or short, she should always be allowed to drink freely, as that will assist in clearing the third stomach; and when that has been accomplished, she may be kept better; but this must never be done hastily. Some time must be allowed for the digestive system to recover its tone or energy.

Saline oily Opening Drench.

Take of Epsom salt	6 to 8 ounces
Carbonate of soda	¼ ounce
Water	1 quart
Castor or olive oil	4 to 6 or 8 ounces

Mix for one drench.

Opening Drench for Cows that are kept on Hay, or that have been recently taken from it.

Barbadoes aloes	½ ounce
Powdered ginger	1 to 2 drams
Water	1 quart
Epsom salt	6 ounces, or when this is not at hand 4 ounces of common salt
Carbonate of soda	¼ ounce
Tincture of opium	½ ounce, or anodyne carminative tincture 2 ounces

Mix for one drench.

From the foregoing observations it may be perceived that inflammation of the fourth, or milk stomach, may take place in various degrees, and under different circumstances; and some difference in the mode of treatment is therefore required. The state or condition of the animal, the presence or absence of febrile symptoms, the age of the animal, the period of the disorder at which she is seen, the season of the year, and the situation in which she has been kept, are circumstances that must always be enquired into, and by which our treatment must be regulated; and in this there will be no difficulty, if we attend carefully to the principles or fundamental rules contained in the introductory chapter.

CHAPTER XXII.

INFLAMMATION OF THE HEART.

This disorder is almost always occasioned by over driving, when cattle are in good order, or fat, and especially when they have been stall fed, and unaccustomed to exercise. It is generally attended with symptoms of inflamed lungs, and sometimes with pain in the bowels; in short, it may be considered as general inflammation. It is sometimes brought on by the animal drinking cold water when over driven or heated by exercise, but this is more likely to produce inflammation in the stomach and bowels. Copious bleeding, and keeping the animal cool and quiet, are the only remedies. The best food is thin bran mashes, or whey; and grass, when the animal is sufficiently recovered to be turned out. Two or three gallons of blood may be taken off in such cases; for the bleeding should always be continued until faintness is produced; and if the animal drops down from faintness, and continues so for some time, no danger need be apprehended, for whenever the disorder is curable, there is nothing else that can cure it.

CHAPTER XXIII.

INFLAMMATION OF THE BOWELS.

THIS disorder in cattle is almost always a consequence of improper feeding, which causes indigestion and flatulency. The first symptoms are named *blasting*. And the beast is said to be *blasted*, that is, blown up, sometimes almost to suffocation, by the air which escapes from the undigested food.* The bowels are so distended, or stretched by the air confined in them, that they either burst, or a high degree of inflammation takes place, which terminates in mortification and death. I have known this disease happen from stall feeding on potatoes, at a time when this vegetable was cheap, and on that account, the farmer was so imprudent as to give the animal more than he was capable of digesting. Turning them too hastily into rich pasture will sometimes produce the same effect, and so indeed will the best kind of food when given too largely to an animal that has an inordinate appetite, which is sometimes the case with cattle, but more frequently with horses.

---

* See the article Hoven, Blown, or Blasting.

(See vol. 1, or Compendium of the Veterinary Art.)

The symptoms vary more in the degree or violence with which the disease attacks than in character. The animal appears to be uneasy, and loses appetite; the body swells, and appears most prominent on the left side. The pain gradually increases, and the animal becomes more restless, often lying down, and soon rising again, she tries to strike her belly with her hind feet, or her horns. If relief is not afforded at this period, inflammation takes place in the bowels, or in the stomach and bowels, which is known by the pulse becoming quicker (See *Pulse*); the breathing more disturbed, and the pain more violent. This stage of the disorder is soon followed by death. The first remedy to be employed is the anodyne opening drench, that is, the drench No. 1, prescribed for *red water*, unless the breathing is much disturbed, and the attack violent, in which case the animal should be freely bled, as quickly as possible; but in slighter attacks, the anodyne opening drench, and the opening clyster, will generally be found sufficient. Still if the animal is in good order, it will be advisable as a precautionary measure, and especially if the horns are hot, and the vessels of the eye appear full. Clysters are a new remedy with cattle doctors, but they are useful, and cannot do any harm; therefore, every proprietor should be provided with the means of administering them. (See *Clysters*). The animal should be turned into a field, or barton, to exercise herself. I have seen this disorder produced by giving a cow unbruised oats. Grain for cattle should always be bruised, and mixed with cut straw, or grains.

CHAPTER XXIV.

INFLAMMATION OF THE KIDNEYS.

THE *red water*, as it occurs in young stock, and working oxen, when put up into good pasture, or spring pasture, where artificial grasses abound, and are beginning to shoot, does not come strictly under this denomination, but is rather to be considered as arising from repletion of the blood vessels, and a previously relaxed state of the vessels of the kidneys. (See *Red Water*; see also Essay on ditto, Appendix.) Acute inflammation of the kidneys may be produced by blows on the loins, strains, or violent exertion, by one riding or ramping upon another. The most conspicuous symptom is a frequent desire to void urine, which is done with difficulty, and in small quantity. And instead of being transparent, and nearly limpid, it is bloody, or dark coloured. Bleeding freely is the first remedy, and then the saline opening drench should be given. When the urine continues bloody, or of a red colour, after the pain and difficulty are gone off, and the animal voids it less frequently, and in larger quantity, the astringent drench should be given. The state of the bowels, however, should always be attended to, and costiveness avoided or removed when it takes place.

Saline Opening Drench.

Take of Epsom, or Glauber's salts	6 to 8 ounces
Water	1 quart
Castor oil	4 to 6 ounces

Mix for one drench.

Astringent Drench.

Powdered Catechu	2 drams
Opium	¼ dram
Alum	3 drams
Ginger	1 to 2 drams
Water	½ a pint.

Simmer the ingredients in the water for a few minutes; and, when removed from the fire, add half a pint of good strong beer, or ale. This drench may be repeated if necessary.

CHAPTER XXV.

STOPPAGE OF WATER, RETENTION AND SUPPRESSION OF URINE, STRANGURY, &C.

STOPPAGE of water, as it is commonly called, both in cattle and horses, often, perhaps generally, depends upon the stomachs and bowels being loaded, or blown up with air. In the cow, it is from the first stomach, or rumen, being loaded or blown up; in the horse it is generally the large bowels that are loaded; in both cases, the urine is stopped by the bladder being pressed downward, so that its neck rests upon the bones which form the brim of the pelvis, and is thereby completely closed. Pregnant cows, during the latter period of gestation, are subject to stoppage of urine, when tied up, and fed wholly on hay, and especially when fed too liberally on grains. Clysters are useful in this complaint, and the anodyne opening drench prescribed for *red water*, that is, the drench marked No. 1, or the following, when that drench cannot be had in time.

Take of common salt .... 4 ounces
Flour of mustard, a table spoonful

Water	1 quart
Gin, one noggin, or ..	4 ounces.

A little grated ginger may be added, and if no gin can be had, a pint of strong beer may be substituted. The clyster should never be omitted. (See *Clysters.*)

CHAPTER XXVI.

INFLAMMATION OF THE WOMB, OR, CALF BED, PUERPERAL FEVER, MILK FEVER.

Many cows die of this disorder, which is produced either from being too fat at the time of calving, from having been fed improperly, from the calf having been disturbed in the womb, and having thereby its position changed, or from the force and violence employed in delivery. Difficult calving is so frequent in cows, that cattle doctors who have acquired a successful method of assisting them, or in drawing the calf, as it is termed, are considered very useful persons in a dairy district. Too often, however, they do considerable mischief by the force they employ, and especially if the cow is fat, or in good order. Not only inflammation of the womb is thus produced, but such exhaustion of the vital power, that the fever which follows quickly proves fatal. The only remedies to be employed, are bleeding, a mild laxative, and a clyster. Cordials and anodynes are sometimes employed, such as ale, with a little toast in it, or some preparation of opium. There may be cases where the cow after calving appears languid and weak, and where such medicines are useful, by giving temporary energy to the system, and thereby hasten the expulsion of the after-birth; but whenever there is much fever, which is indicated by the quickness of the pulse, difficult breathing, pain, and want of appetite, cordials would be improper. Puerperal, or milk fever, is seldom cured, but may always, or almost always, be prevented, by keeping cows as much as can be in the field, and when it becomes necessary to give hay, to give such only as is of the best quality. It is advisable also to keep them in a situation where they can have shelter in wet and cold weather. Tying them up, and keeping them on bad hay, is certainly the source of the evil, but it should also be known, that exposure to the wet and cold of winter greatly depresses the vital power, and thereby diminishes the energy of the digestive system, rendering it less capable than it would otherwise be, of digesting the bad hay, or straw, that is often, or generally, given them in winter. Unwholesome water, such as is contained in ponds when there has been a continuance of dry weather, is one cause, I believe, of abortion, and probably of disturbing or altering the position of the calf in the womb.

CHAPTER XXVII.

SLIPPING CALF, SLINKING, ABORTION.

This is most probably occasioned by tying up cattle, and feeding them on bad hay, or stale grains, and should, therefore, be prevented by pursuing a better method. Feeding on unwholesome food, with want of exercise, occasions indigestion and flatulency, and this probably so disturbs the young calf in the uterus, as to cause either abortion, or such an alteration in its position, as renders delivery difficult, and often impracticable. When a cow slips calf, and any thing offensive is left in the field or barton, other pregnant cows smelling are liable to meet with the same. Every thing that is of an offensive smell, especially putrid flesh or blood, should always be carefully removed. (See Essays, Appendix.) In Gloucestershire they suffer the cows to eat the after-birth, and it is supposed to be useful.

CHAPTER XXVIII.

LOCKED JAW.

THIS disorder in cattle, is generally the effect of wounds; and I have known one case which appeared to be produced by the animal breaking off one of the horns at the root. Plentiful bleeding is the first remedy; and if the jaws are not so completely closed, as to prevent a drench from being given, let the following remedy be administered, and its effect hastened by throwing up a clyster. The jaws, as well as the muscles of the neck, when they are affected, should be well rubbed with some warm liniment, and afterwards covered with fresh sheep's skin, the flesh side inwards. This will keep up a copious perspiration from the parts. Pouring cold water over the body has been recommended, that is, continuing to throw it over him, by means of a bucket. Should the disorder continue, one or two ounces of tincture of opium may be given, in beer or brandy, and water, and a solution of 3 or 4 drams of solid opium, in a quart of water, may be thrown up as a clyster.

CHAPTER XXIX.

WOUNDS.

The wounds of cattle are mostly inflicted by goring each other with their horns, or by breaking over fences; and, when deep or extensive, are generally followed by considerable inflammation. The treatment of these wounds, though represented by farriers as an intricate and mysterious branch of the art, is, in fact, very simple. When the wound is considerable, and some important part has been injured, the irritating treatment commonly adopted generally destroys the animal, and in slighter wounds, their stimulating applications are often improper. In deep or extensive wounds, especially of important parts, such as the belly, the chest, joints or tendons, the most effectual means must be quickly employed, to prevent a fatal inflammation. Bleeding freely, and the saline opening drench, are the first remedies to be employed, and afterwards emollient fomentations. When the inflammation has subsided, and the wound discharges good matter, a tent of digestive ointment may be introduced daily, that it may heal from the bottom. If the opening is small, and the matter has not free vent, it should be so enlarged that no hollow part may remain, or none by which the matter may be confined. When a wound bleeds considerably, there is scarcely ever danger, but if it is thought necessary to stop it, the most effectual means is pressure. It is difficult to tie the artery, or vein, as surgeons do in the human body, and is often impracticable. When the belly has been wounded, and the bowels appear through the wound, they should be carefully put back again, and if there be any dirt about them, it should be washed off with warm water only. It may be necessary to throw down the animal in order to replace the gut, and it may even be necessary to enlarge the opening, or wound, for the purpose, through which the bowel has come out. The wound is then to be stitched up, but the stitches must be passed through the skin, only; a bandage should then be applied as a further security. Punctured wounds about joints or tendons require the application of lunar caustic.

Stitching, or sewing up wounds, is not so useful as it is supposed to be: the wounds of cattle, as well as of horses, are generally attended with bruising and laceration, and if stitched up, the stitches always separate again in two or three days, and sometimes the stitches cause much irritation and pain; when a flap of skin only is separated, the best plan is to cut it off.

CHAPTER XXX.

STRAINS AND BRUISES.

When these are considerable, bleeding is proper; and the best application is a fomentation of warm water, and some emollient ointment. In situations that will admit of it, an emollient poultice (See *Poultice*), is the best remedy. When the inflammation has subsided, the following embrocation may be applied.

Embrocation for Strains and Bruises.

Take of sweet oil .... 2 ounces
Oil of turpentine .... 1 ounce
Liquid ammonia ...... 1 ounce.—Mix.

Digestive Ointment.

Take of hog's lard and common turpentine, of each, 4 ounces. Melt them over the fire, and add powdered verdigris, or acetate of copper, finely powdered, 1 ounce. When removed from the fire, continue stirring until the ointment is cold.

CHAPTER XXXI.

FOUL IN THE FOOT, LOO, OR LOW.

THIS disorder most commonly occurs to oxen, or bulls, when fattening, or to cows that are fattening, especially when they are fed otherwise than on grass. It appears to arise from a bad state of the blood, and is similar to the foot rot in sheep, and the grease in horses. It consists in an inflammation, cracks, or soreness, and a discharge of stinking matter between the claws of the hoof, the matter bearing some resemblance to that which proceeds from the heels of horses, when labouring under the disease named grease. The common remedy for this, is to rub some tar rope to and fro between the claws, so as to give considerable pain, and afterwards to dress the part with some mild caustic, such as spirit of salt. It will be found a better plan, however, after wiping the sore part with some tow, to wash it with a solution of blue vitriol, twice a day. If this does not succeed, something stronger may be used, such as a solution of two drams of sublimate in half a pint or twelve ounces of water. Egyptiacum has been recommended for the purpose, mixed with tincture of myrrh and turpentine. As the disorder proceeds from a bad state of the blood, some medicine will be necessary, and if the inflammation is considerable, the animal should be freely bleed. Stall-fed cattle labouring under this disorder, should be turned to grass, which will greatly tend to the purification of the blood. This disorder sometimes attacks in a more violent form, and attended with a high degree of inflammation, and swelling just above the foot, or at the back part, or heel, the swelling sometimes extending all up the leg, and accompanied with considerable fever. Copious bleeding, or until the animal becomes faint, is the best remedy in this case; and if sufficient blood can be taken from the toe, by means of a drawing knife, as in horses, it will more quickly afford relief. In one case the artery going to the claws was opened with good effect: it bleed freely, and afforded more relief than was ever before observed. Bleeding from the toe, however, will be found more easy, and I think equally effectual. The best medicine to be given in this, as well as in the former kind, is the following saline purgative; and a field where the grass is not abundant, is by far the best situation after the inflammation is abated. After bleeding at the toe, the whole foot should be wrapt in a large poultice, (See *Poultice*,) which should be renewed morning and evening, until the inflammation has subsided. Sometimes the swelling bursts, and a core comes out. When this has taken place, the poultice should still be continued for a day or two, and then the wound may be dressed daily, with tincture of myrrh, solution of blue vitriol, or the following ointment.

Ointment for the Low.

Take of hog's lard and common turpentine, of each four ounces, melt together, and when removed from the fire, stir in of blue vitriol, *very finely powdered*, one ounce: continue stirring until the ointment is cold.

Violent inflammation sometimes takes place in the feet of cattle, from over exertion, or over driving, and requires the same treatment as the above, though more resembling the acute founder of horses in its nature; for it consists in a high degree of inflammation of the parts within the hoof, and is often attended, or preceded, by considerable fever. When the *low*, or foul in the foot, has been neglected, and becomes a chronic disorder, it is generally found difficult of cure. In such cases, it will generally be found that the cartilages, or bones of the foot, have become carious, or rotten, and then it is necessary to lay bare the carious bone, and scrape it with a suitable instrument; or, if it be the cartilage ligament, or gristle, that is affected, it should be dressed to the bottom, once with sublimate, and afterwards with solution of blue vitriol, tincture of myrrh, or friar's balsam. This last stage of *low* resembles the canker of horses, and cannot be cured without laying bare the diseased parts, or, in other words, without going to the bottom of the disorder, and thereby curing it radically. When this, or any other disorder, depends upon a bad state of the blood, from improper feeding, and want of exercise, it must be obvious, that change of food and exercise are essential to the cure. I have known grains, and especially stale grains, cause this disorder in sheep; and there is no food, which tends so much as grains to injure the blood of horses, and bring on mange, grease, and other cutaneous disorders. It is the same, no doubt, with other cattle, especially when allowed to feed freely on them, and it is astonishing what an appetite they acquire for them, or grains and malt dust, mixed with oats and chaff, after being accustomed to such diet. The best mode of purifying the blood is turning the animal to grass, and keeping him on it wholly. The best physic is the saline laxative, and afterwards small doses of nitre, or nitre and rosin mixed together. This keeps up an increased discharge of urine, with which the impure or excrementitious parts of the blood flow off.

CHAPTER XXXII.

SUPPLEMENTARY REMARKS ON THE DISEASES OF THE COW.

It has been justly observed, that writers on cattle medicine have all of them been fond of splitting diseases, and dividing one into half a dozen or more. It is just the same with local diseases, many of which may be comprehended under the three general heads of wounds, bruises, strains, and disorders of the skin; and these have already been considered. There are, however, some diseases which may be termed specific; of this kind is cow-pox, which, though considered as a local disorder, is really constitutional, and one of great importance, as I have shewn in the third volume of Veterinary Medicine, which the reader may consult. The only thing necessary to observe of the cow-pox here, is, that it requires no medical treatment, being a most benign disease, that always does well of itself. I cannot help, however, expressing my conviction, that if children were inoculated with lymph, from the vesicle on the cow's teat, at the proper period, it would be as effectual a security against small-pox, as small-pox inoculation itself, provided the child was healthy, or free from cutaneous complaints. And I am fully persuaded, that the failures of vaccination which are so often occuring, depend upon the unhealthy state of the children to whose arms it is applied; that is, upon their having some eruption, or disease of the skin.

Angle Berries and Warts.

Cut them off with a pair of scissars or a knife. No dressing is afterwards necessary, except touching the part, after the bleeding has ceased, with a solution of blue vitrol. The more it bleeds the better.

Consumption, or Atrophy.

This disorder is incurable, unless it is taken early, and the animal kept in a good sheltered pasture. It is produced not only by cold, or moisture, as is commonly supposed, but also by bad keep. Some stock are tender and of weakly constitutions from their birth; and therefore, if placed in more exposed and much colder situations than those they are bred in, will be more liable to consumption, having less vital energy. But bad keep, especially bad hay and straw, is always the exciting cause. The chyle formed from such food becomes acrimonious, inflames, and obstructs the mesenteric glands, and produces a dreadful disease, even of the great mesenteric artery, which will be found full of worms. This is always the case, I believe, in consumptive disorders.

Nervous Disorders.

Such a disorder is noticed by writers on cattle medicine, especially by Downing, who prescribes for it an expensive drench, which cannot do any good, and may be prevented from doing harm by the ale in which is given. The diet he prescribes is not so objectionable, but good grass, or malt mashes with bran, is much better. The disorder he describes appears to be nothing more than a great degree of debility, into which these animals often fall, from the badness of the food on which they are kept, or from having many calves, and yielding a large quantity of milk for a considerable time.

Loss of Milk.

This is always occasioned by an accumulation of food in the third stomach, and consequent derangement, or loss of power, in the fourth stomach. It may be removed by the opening drench of aloes, salt, whey, or water, and carminative tincture, prescribed in another chapter. (See Index.)

Mange.

This disorder is less common in cows than in horses, and is brought on by keeping the animal on unwholesome food during the winter. The itching the disease occasions makes it rub itself against trees, or gates, until the hair is rubbed off, and the skin thickened, and drawn into folds about the shoulder, neck, or cheek, and sometimes on other parts of the body. The best situation for cows thus affected, is a field where the pasture is rather bare; and that, with a careful application of the following liniment, will soon cure the disorder.

Liniment for Mange.

sulphur vivum, finely powdered and passed through a fine sieve.	4 ounces

Train oil,	12 ounces
Oil of turpentine,	4 ounces

Mix.

N. B. Sulphur vivum is prescribed in preference to sublimate of sulphur, or flowers of sulphur, on account of its being cheaper, and, if finely powdered, equally effectual. Sublimate of sulphur, however, is certainly purer, and stronger, and, when expence is not regarded, should be preferred. Inveterate cases of mange may be found that will resist this remedy, but I believe very seldom, when it is properly applied, that is, well rubbed in with a hard brush, and the parts previously curried with an old curry-comb. One good application is generally sufficient. Should a case, however, occur, in which this remedy proves ineffectual, the following may be tried. Let all the diseased parts be well washed with soft soap and water, and a hard brush, and all the soap carefully washed off. Then apply the following lotion.

Oxymuriate of mercury, (corrosive sublimate,)	2 drams
Muriatic acid, (spirit of salt,)	½ ounce
Water,	12 to 16 oz.

Mix.

This lotion must be used only when the other has failed, and even then must not be applied extensively. I have lately seen an account in a newspaper, of an action being brought against a farrier for the recovery of damages; some mangy cattle having died, after he had attempted to cure them by the use of a mercurial lotion, made with oxymuriate of mercury. (See vol. ii.)

* * *

Lice in Cattle.

Cattle that have been half starved during winter, by being kept on bad hay or straw, in cold, damp situations, are often covered with lice: these may be killed with a strong decoction, or infusion of tobacco, or with the mange ointment, prescribed in the preceding page. Improvement in keep is of course necessary, but they must not be put suddenly into good pasture, as they would then become liable to inflammatory disorders. By running on commons, or in pasture where they must work hard for their living, the digestive organs acquire strength, and then better pasture may be allowed them without danger. A decoction of stavesacre will kill lice, or stavesacre finely powdered, and mixed with lard and train oil.

Warbles, Proof Worms, &c.

These are small tumours, which, in the spring and summer, appear in various parts of the body. They are occasioned by the bite of a species of gad-fly, which immediately after deposits an egg in the punctured part. This egg gradually becomes a maggot, or worm, which inflames the part, and causes matter to form. The maggot appears to be nourished by this matter, and when mature, or fit for another change, the small abscess which has served as an habitation for it, bursts, and discharges both the matter and the maggot; the latter soon becomes a fly, and in due time deposits eggs on the skin of the animal, like its parent. From this view of the subject, we are led to admire the wonderful works of the Almighty, for the time these warbles, or proof worms, appear, is that, when the blood is formed most quickly, and these little abscesses serve as so many rowels, or issues, for carrying off the superfluous blood, which is first changed into pus, or matter. The best thing to be done is to turn the animal into barer pasture, and leave the warble entirely to nature.

DISORDERS OF CALVES.

Calves are subject to several disorders during the time of sucking, of weaning, or while they are preparing or fattening for the butcher. These disorders, or rather symptoms, have obtained different names, such as cords, diarrhœa, costiveness, &c. But they are really only symptoms of one disorder, and that is indigestion. Calves sometimes are of a sickly or weak constitution, and require care as to the quantity of milk they take at a time; and if they exceed that quantity, their stomachs are disordered; and in consequence of this disorder, the acid which is always formed in their stomachs, for the purpose of effecting a change in the milk necessary to digestion, and the formation of chyle, is increased in quantity, and altered in quality. In consequence of this, the milk, instead of being changed gradually, and formed into very fine curds or flakes, is coagulated quickly, and large indigestible curds are formed from it. This produces almost all the diseases of calves. When the disorder has arrived at a certain height, the muscles are affected with spasms, and drawn into *cords*, as it is termed, that is, they contract with violence, and appear to feel knotted and hard in certain parts. Flatulency also takes place, and they become blown up, and affected with flatulent colic, which often terminates in inflammation and death. Those curds frequently remain in the stomach a considerable time, and I have seen them so compressed as to be absolutely formed into cheese, perfectly solid, and smelling like new cheese, a little sourish. Hence arise the obstinate costiveness, as well as the diarrhœa that sometimes takes place. Calves that are brought up by hand, even if they are not of delicate, weak constitutions, are liable to all these affections, merely from being fed improperly, that is, from having too much milk at a time, from that milk not being sufficiently fresh, or from the milk being in a bad state, from a disordered stomach in the cow, owing, almost always, to her being fed with bad hay, or stale grains. The reader must now recollect what has been said on the formation of milk in the cow's stomach, and how liable the milk is to become altered in quality, as well as quantity, by feeding her upon bad hay. There is an acid formed in the stomach of the cow, and of all animals, when that organ is weakened in a certain degree. This acid will be conveyed with the milk into the udder, and from thence into the stomach of the calf; and this being admitted, what difficulty is there in accounting for all their disorders?

To cure those disorders is one thing, and will soon be described; to prevent them is another, and of much more importance. The mode of prevention is sufficiently obvious; but to cure them requires some trouble, and considerable care and attention. That symptom called the cords, has at times proved very destructive, especially in Scotland, where there is but little grass, and a great deal of bad hay. Their system of keeping it in large cocks, is the ruin of all their hay, as some gentlemen of this country have experienced, who have had Scotch bailiffs on their farms. The curative treatment will avail but little, unless the preventive treatment is also attended to, that is, unless the calf is supplied with wholesome food, and in suitable quantities. The following is the method to be pursued. The first thing to be done, is to correct the morbid acidity in the calf's stomach, and this can only be done by the following medicine. Take a small knob of lime, about the size of an egg, such as will slake readily, put it into a jug that has a lip to it, and pour on it as much water as is necessary to slake it. This being done, pour on it one pint of boiling water, and having stirred it up a little, let it be covered up close. Then take a bottle that will contain eight ounces, put into it two ounces of subcarbonate of potash, commonly called salt of tartar, and fill up the bottle with the lime water, made as before directed, taking care to pour it off, not quite fine, but a little turbid; keep the bottle well corked, and mark it. Solution of potash:—this is the best thing that can be given for correcting the acidity of the stomach, and the quantity here directed will be sufficient for a great number of calves. It is necessary to give one or two tea-spoonfuls of this at first, with half an ounce of Epsom salts, dissolved in four ounces of thin gruel. This will carry off the curd, that may have accumulated in the stomach, and at the same time destroy the acidity. If the disorder is accompanied with griping pains, it is necessary to give with it a tea-spoonful of tincture of opium, or, what is better, a table-spoonful of the anodyne carminative tincture. This will soon relieve the griping pains, without preventing the operation of the laxative. When the calf has been thus relieved, it will be necessary to feed him for a few days with gruel made of arrow-root, or very fine wheat flour, mixing with each quantity about twenty drops of the solution of potash, or just as much, and no more, as will neutralize the acid that may be in the stomach. This, however, must be left off gradually, and so must the arrow-root, and the calf must be brought back gradually to the use of milk.

Inflammatory Diseases.

Though indigestion, from improper feeding, is the cause of most of the disorders of calves, they sometimes thrive too quickly, or form so much blood, as to be attacked with inflammatory complaints. This is not often the case during the time they are fed on milk, but frequently when they are about one year old. Inflammatory disorders are denoted by heaviness, hanging of the head and ears, watery eyes, cough, loss of appetite, and sometimes quick breathing. Bleed freely, and give six or eight ounces of Epsom salts in water. When calves are about a year old, great care must be taken to prevent these inflammatory diseases, by keeping them in bare pasture. This is more effectual than all medicinal preventives. Thousands of calves have been destroyed by forcing them, as it is termed, at this period, that is, by keeping them too well. Writers on cattle medicine have recommended drenches and bleeding when young stock are turned into good pasture, but how much better is it to keep them out of it? An operation has also been proposed, and practised with success, it it said, as a preventive of inflammatory diseases, and especially of that named *quarter ill* (See Quarter ill), in young stock, or yearlings. This operation consists in making an incision in the skin between the claws, and taking up a bluish vessel that is found there. Probably the pain of the operation, and of the sores it produces, prevents the animal from feeding so greedily, or from thriving so fast as he otherwise would. It has been said, but I have not met with an instance of it, that calves, when first dropped, refuse the teat, and cannot be made to suck until some salt has been rubbed on their tongue, to clear it of a glutinous mucus, which is the cause of their having no appetite. When this fails, it may be advisable to add an ounce or two of Epsom salts, with two drams of carbonate of soda, in a little whey or water. If they appear to be griped a little, anodyne carminative tincture may be given with the salts, and a little castor oil may be added. When calves appear to feed badly, and not to thrive, from half a pint to a pint of urine has been given with good effect. Probably a dose of salts would do better.

DISEASES OF SHEEP.

Sheep, in their digestive organs, are very similar to the cow, except in being more tender, and liable to disorder, though naturally hardy, it may be presumed, as other animals. The imaginary improvements that have been made in the breed have produced an alarming degeneracy in this race of animals. The few specimens of their lungs and livers, and probably the best only, that are shewn at the butchers' stalls, and the incredible numbers sometimes swept off from a continuance of wet weather, are sufficient proofs of the truth of my assertion. The soil and climate in which the animal was produced is that which is most suitable for him, and in which it will always come to perfection, if it come from healthy parents.

If it is removed from this situation, and presumptuous attempts are made to improve the work of the Creator of the universe, some disorder, more or less destructive, will always result from it. Hence we have hydatids in the cavities of the brain, a disorder unknown in the original race; tuberculated lungs, or consumption, so common, that scarcely any sheep are wholly free from it; and diseases of the liver, so frequent, that they are considered by many unfit for food. To what extent this constitutional debility, and liability to disorder, may proceed, it is painful to conjecture. But if those imaginary improvements in breeding are persisted in, the animal may in time become incapable of bearing the cold and vicissitudes of our climate, however it may be apparently improved in wool, and in a tendency or disposition to fatness. It is a merciful provision, however, in this animal especially, that his disorders, though ultimately fatal, do not prevent his becoming fat, and sufficient time is always allowed for the fleece and the carcase to become useful. This is beautifully exemplified in the disorders named hydrocephalus and rot. The former seldom produces any serious symptom, until after the first year, and never proves fatal till the sheep-shearing time. The rot never attacks them till between the first and second year, and they always become fat before any fatal symptoms make their appearance.

Hydrocephalus, Dropsy of the Brain, Giddiness, Goggles, Sturdy, Turnsick, &c.

This, as I have before observed, depends upon hydatids, that is, an animated semi-transparent bladder of water, with numerous small white opaque spots about its lower part, or neck, about the size of a pin's head, and which appear to be the germs of other hydatids. They are found in the lateral ventricles of the brain, in the substance of the cerebellum, and within the common sheath of the spinal marrow; they are found generally in one cavity at a time, and seldom affect the contiguous parts, until sufficient time has been allowed for the disease to be cured, or the flesh and fleece to become useful. They are most commonly found in the right ventricle of the brain, sometimes in the left ventricle, less frequently in the substance of the lobe of the brain, or in the right or left lobe of the cerebellum, and still more rarely in the sheath of the spinal marrow. When the hydatid is in the right ventricle, and has grown to a sufficient size to affect the organs of sense by its pressure, it produces blindness in the left eye, and by this circumstance its situation may be always known. If, as the hydatid increases in size sufficiently, (as it will do after the fleece has arrived at perfection,) and the animal has had the benefit of the spring and summer grass, it begins to operate upon the opposite ventricle in a greater degree than upon that which it inhabits. And this it does by bursting, and gradually forcing out its fluid through the septum lucidum into the left ventricle. Thus the right ventricle is somewhat relieved for a time, and the left becomes filled with water, and common hydrocephalus is thus produced in it. This left ventricle then becomes more diseased than the right one, and, by pressing on the left lobe of the cerebellum, will produce paralysis of the right side of the body. Thus we see a wonderful provision is made for sustaining the vitality of the muscular system, when one side of the body has become motionless from paralysis, there being a sufficient quantity of brain left in the right lobe, to sustain the vitality of the whole body. It is wonderful to observe, that after the hydatid has burst, and discharged its fluid into the left ventricle, the substance of the right lobe, which had been removed by the pressure, is gradually regenerated, and I have found the whole lobe nearly restored, and apparently healthy. If the sheep is killed early in the year, the hydatid will be found in perfection, and the right lobe of the brain will be nearly destroyed by it. I have found the roof of the ventricle not more than the sixteenth of an inch in thickness. And the parietal bone above extremely thin, with a small opening in one part, near that part where the horn is formed, and a little behind it.

If a puncture be made through this opening, at this period, the water will gradually be discharged, and the animal will be cured.* Sheep labouring under hydrocephalus, or giddiness, have been considerably relieved by bleeding in the eye vein, or nostril; it would be still better, however, to bleed from the neck vein, as in horses and cows.

Two ounces of Glauber or Epsom salts may be given with good effect.

Bursting or Blasting, or the Blast.

This disorder is apt to occur when sheep are turned into clover, or any kind of pasture that induces them to feed too greedily. Many lambs are thus destroyed. I was informed by an experienced farmer, that he had lost many lambs in this way, and he attributed it to their eating the young shoots of wild thyme in the spring of the year. When attacked with this disorder, they swell almost to suffocation, lie down with their legs stretched out, or stand still scarcely able to breath, and soon die, unless relieved. Some farmers stab them on the left side, or flank, with a knife, and let out the con-

---

[*] This operation has been successfully performed in Dorsetshire.

fined air. The best method however, is, to pass the probang down their throats, into the stomach, and give immediately after the following drench, they should then be moved about a little; and when relieved, they should be removed, and put into the barest pasture, where they should remain until the digestive system, or stomachs, are restored. (See Paunching and Probang.) A clyster also is useful. (See Clysters.)

Drench for Sheep.

Take of common salt, ...	1 ounce
Solution of potash (as prescribed for the cords in calves),	1 table spoonful
Castor oil, or sweet oil, ...	2 table spoonfuls
Water, ...	6 or 8 ounces

If the animal is griped, or in much pain, a little laudanum, (30 or 40 drops) may be added, or a little anodyne carminative tincture (2 or 3 tea-spoonfuls.)

Sheep sometimes hurt themselves by fighting or butting each other; in this case they should be bled freely from the neck. (See Bleeding.)

Goggles.

This disorder is incurable, and is occasioned by water in the ventricles of the brain, and often in the sheath of the medulla oblongata. It is sometimes preceded by giddiness, and then depends on an hydatid, or animated bladder, in one of the ventricles of the brain, which bursts and discharges its water into the opposite ventricle, through the septum lucidum. (See Hydrocephalus.) This disorder, I am inclined to think, is of the same nature as giddiness, and depends on constitutional debility. It has been considered infectious, but is not so; the disposition or tendency to the disorder, may, however, be hereditary, and so may the disorder itself.

Goggles is distinguishable from gid or giddiness, by the sheep being more or less paralytic on one side. The disease runs its course more quickly, and generally destroys the sheep in a short time. The affected animal is generally found alone, its head generally inclined to one side. It is often found in a dry ditch, or boring its head against a gate or hedge. The complaint is incurable.

Rot, Blaine, or Bains.

This disorder often occurs in sheep, and is thought to be hereditary, and it is as much so as any other disease in any animal. That is, the disposition or liability to the disease is hereditary, and that disposition to the disorder is nothing more than constitutional debility. This disposition, then, is a necessary condition to the formation of the disorder, and it will always take place when the exciting causes are applied, which are cold and moisture. Water meadows, therefore, are the most productive source of the rot in sheep. If the sheep are removed, when the disorder is observed to be coming on, to a more elevated situation, where there is good pasture, it will be apparently cured, and they will live as long as they are wanted to live.

Dr. Harrison has published an excellent description of this disorder. He observes, "when in warm, sultry, and rainy weather, sheep that are grazing on low and moist lands feed rapidly, and some of them die suddenly, there is fear that they have contracted the rot." This suspicion will be further increased, if a few weeks afterwards the sheep begin to shrink, and become flaccid about the loins. By pressure about the hips at this time, a crackling is perceptible; now, or soon afterwards, the countenance looks pale, and upon parting the fleece, the skin is found to have changed its vermillion tint for a pale red, and the wool is easily separated from the pelt (skin). As the disorder advances, the skin becomes dappled with yellow or black spots. About this time their eyes lose their lustre, and become white and pearly, from the red vessels on the tunica adnata and eyelids being contracted or entirely obliterated. To this succeed debility and emaciation, which increase continually until the sheep die; or else ascites, and perhaps general dropsy, supervenes before the fatal termination.

These symptoms are rendered more severe by an obstinate purging, which comes on at an uncertain period of the disorder. In the progress of the complaint sheep become what the graziers call *chockered*, that is, affected with a swelling under the chin, which proceeds from a fluid in the cellular membrane under the throat. In five or six days after contracting the rot, the thin edge of the small lobe of the liver becomes of a transparent white, or bluish colour, and this spreads along the upper and lower sides, according to the severity of the complaint; sometimes it does not extend above an inch above the margin. In severe cases, the whole peritonæum investing the liver is diseased, and then it commonly assumes an opaque colour, interspersed with red dark lines or patches. The upper part of the liver is sometimes speckled, like the body of a toad, to which it is thought to bear a striking resemblance; round the common bile duct and hepatic vessels, jelly, like matter is deposited, which varies according to the severity of the attack, from a table-spoonful, or less, to five or six times that quantity. Upon boiling, the liver loses its firmness, and separates into small pieces in the water, or remains soft and flaccid. Several graziers and butchers I have conversed with at different times, having observed that sheep are much disposed to feed during the first three or four weeks after being tainted, omit no opportunity of promoting it, with a view to increase their profits. When the first stage is over, flukes begin to appear in the *pori biliarii*, and common duct of the liver, and in the gall bladder. At first their number is small, but as the disease advances, they increase, and before death are often very numerous. In the last stage of the complaint, they are often to be found in the stomach, as well as in the bowels and liver, and may produce either inflammation, or dropsy, or both these disorders. It sometimes goes off on change of pasture, and sometimes terminates in abscess, or in hard indolent tumours. When sheep have died of dropsy, it has sometimes been named *red water*, from the fluid collected in the abdomen being mixed with blood. This dropsy, however, is preceded by inflammatory symptoms. When rot produces abscesses in the liver, or lungs, the animal generally lingers for some time, and at last dies of atrophy, or consumption. The most common termination of the disease, according to Doctor Harrison, is in schirrus, or hard knots in the liver. Clater, in his Treatise on Cattle Medicine, says, he formerly published a remedy for this disorder, which succeeded in many flocks that he undertook the cure of, though they were in the last stage, and he had an opportunity of giving it a fair trial. He frequently succeeded (he states) in curing nine out of ten. He does not inform us what this medicine was, but says the following recipe will be found of *infinite value!*

Recipe.

Nitre, in powder, ...	6 ounces
Ginger, fresh powdered,	4 ounces
Colcother of vitriol, ..	2 ounces
Common salt, ...	3 pounds and a half
Boiling water, ...	3 gallons

Stir them, and add to every quart of the mixtur 3 ounces of spirit (oil) of turpentine, and bottle it for use. Keep the infected sheep from food all night, and on the following morning give each sheep 2 ounces of the above mixture, taking care to shake the bottle well immediately before it is poured off. To such as are weakly, give one half, or three-fourths the dose. Keep them from food three hours, after giving the medicine, and then turn them into a dry pasture. The drench is to be given every fourth day, for three times. Sheep take salt readily, and perhaps this, with change of situation, is the best remedy, as well as preservative. The dose of common salt is from half an ounce to 2 ounces; probably a small quantity given often, or the allowing them to take what they like, would be a better method of giving it, than giving a full dose at once.

Foot Rot.

This disorder is analogous to the grease, the thrush, and the canker of the horse, and the *Loo*, or *Loe*, or *Foul in the Foot*, in cattle. It is produced by the same cause, as has been fully explained in the fifth edition of the third volume, under the article Grease, which the reader is requested to read.

According to this opinion, if a horse, affected with grease, is put into a sheep fold, he would be likely to infect the whole flock with foot rot. And a sheep affected with foot rot would do the same thing. This opinion, however, has not been so fully established as not to admit of some doubt. The disorder, then, is contagious, but may be produced also by other causes, and especially by feeding on stale grains and bad hay. The only method of curing it, is to examine the foot carefully, and pare away every bit of horn, under which the disease may have formed. When this is done effectually, and it is better to pare away too much than too little, a saturated solution of blue vitriol will always effect a cure, and is sufficiently strong for the very worst cases. If a more expensive remedy is desired, it may be dissolved in vinegar; but it will then be considerably stronger, and will require dilution. It is necessary also to avoid the cause that produces this disorder, by changing their situation, and giving them wholesome food. I have seen this disorder before any ulceration had taken place; it was observed by the sheep being very lame, and, on examining the foot, there was considerable inflammation in the skin between the claws, and immediately above. Lambs, as well as the ewes, were affected with it; so much so, that few of the two flocks I examined, were perfectly free from it. The disease appeared to be put a stop to for a time, by applying a solution of blue vitriol, but it returned again and again in several, and did not go off until they were fed wholly on grass. They had been fed during the winter, and the early part of spring, on grains, with a little hay, and what grass they could pick up. The grains were often sour, and they appeared to be remarkably fond of them in that state Some of the sheep had a swelling of the sole of the foot, and great tenderness, as in the convex or pummice foot of horses. In many of them ulceration took place, and a separation of some of the horn.

Flux, or Scouring in Sheep.

This disorder is a consequence of keeping sheep in cold situations, and feeding them with bad hay. Change of situation, and proper food, that is, good hay or grass, is the first remedy. And if any medicine is given, it should be one fourth part of that prescribed for scouring cattle.

The Blood, or Blood Striking in Sheep.

This disorder is similar to the quarter-ill of young cattle. It takes place generally in rich and inclosed pastures, where close feeding is practised. It has been often experienced by the Leicestershire graziers from putting their sheep into clover. It is said, that a great number of sheep die of this disorder in Romney Marsh, in Kent; no less than four in a hundred, in some situations, where the soil is rich, and generally in spring, when the young shoots of grasses, and natural clover, are full of juices. In this state, they are eaten greedily, and often prove fatal, particularly after a warm day or two. On the approach of the disorder, they are observed to separate themselves from the flock, stand as if in pain, and look dull and heavy. They heave at the flanks, or pant, or rather breathe much quicker than usual. Sometimes they drop down dead in a short time; and seldom recover, unless bled freely. They should be bled in the neck, like a horse or bullock, and not by cutting the ears or tail, or nostril, or opening the eye vein, as is commonly practised. After this, they should be turned into bare pasture. If they appear to be costive, an ounce or two of Epsom salt, or an ounce of common salt, dissolved in water, may be given.

Braxy, Dry Braxy, Water Braxy, Bowel Sickness.

Water braxy is an inflammatory disorder, which quickly terminates in dropsy of the belly, or chest; dry braxy, is indigestion, or obstruction in the first and third stomach, by feeding during winter on dry sapless food, such as the tops of heather, bent, and other dry food. The symptoms of the former are quick breathing, hanging the head and ears, loss of appetite, and separating from the flock. In the latter, there is swelling of the belly, and griping pains, which often become violent. Sometimes the animal stands with its feet almost together; at other he is seen rising up and lying down every minute almost. The mouth and tongue are dry and parched, and the white of the eye inflamed. In both diseases, bleed freely from the neck vein; and, in the latter, give one ounce of common salt, in half a pint of water, and a tea-spoonful of tincture of opium; a dram of powdered aloes may be added, and a little ginger.

Scab.

This disorder is of the same nature as the mange in horses, and may be cured by the same means; that is, by rubbing upon the diseased parts, the following liniment: sulphur vivum finely powdered or levigated, 4 ounces, train oil from 12 ounces, to one pint, oil of turpentine, 4 ounces: mix well together. This liniment must be carefully applied, so as to reach the bottom of the sores, the scabs having been previously scraped off with a blunt knife, or any suitable instrument. It has been said, that mercurial ointment will cure this disease.

Catarrhal Affections, Hoose, Cough, Distemper.

This disorder in sheep is similar to that in cattle, described in a former part of the book. It exists in various degrees, but the same remedy is always necessary, that is, bleeding to the extent of one pint. If any medicine is required, it is half an ounce of common salt, or 1 ounce of Epsom salt, dissolved in 4 ounces of thin gruel. Sheep should never be bled in the nose or ears, as is commonly done. There is no difficulty whatever in bleeding sheep in the same manner that bullocks are bled, without cutting off a bit of wool. I was lately consulted for a large flock of sheep affected with this disorder, after between fifty and sixty had died. The proprietor had been bleeding in the nose and ears, and giving some absurd remedies. I prescribed the above treatment, and, by adopting it, the rest of the flock were saved. (See Bleeding.)

Worm in the Horn, or Frontal Sinuses.

This is very common in sheep, as much so in those without horns, as those that have them. They are deposited by the fly within the alæ, or flaps of the nostrils, from whence they gradually crawl up the septum nasi, or partition between the nostrils, which possesses less sensibility than the other parts within the nose; and, directed by this unerring guide, they arrive at the frontal sinus, which communicates with the bony cavity of the horn. These worms at times cause great irritation, and make the sheep almost distracted. One effect, however, uniformly results from the irritation they produce. They occur at a time when the grass is succulent and nutritious, and when too much blood may flow to the brain, were it not thus diverted, and employed for the formation of a new horn, or discharged in the form of mucus from the nostril. Thus it is that the animal has a new shoot of horn annually, and from this circumstance his age may be determined. When the worm has accomplished this purpose, he crawls out of his habitation, is thrown out upon the grass, and becomes a fly. The delirium which they sometimes occasion may be relieved by trepanning the frontal sinuses, which is a much better remedy than that commonly employed, of breaking the horn. The frontal sinuses are situated immediately above the eyes, towards the median line. Bleeding may afford some relief.

DISEASES OF LAMBS.

Lambs are subject to several diseases, which depend either on constitutional debility, exposure to cold and wet, especially the latter; improper food, and sudden changes of temperature, as in the early part of spring, when the middle of the day is sometimes hot, and the night and morning excessively cold. Even when suckers they are liable to indigestion and flatulent colic, either from the unwholesome state of the ewe's milk, or from sucking more than their stomachs could bear. On examining the stomach of a lamb that died of indigestion, I have found hard curds, some of them so condensed as to have the form and the smell of new cheese. The unwholesome state of the ewe's milk appeared to arise from feeding on bad hay; for, as in cows, the milk is formed in the stomach, and if the stomach is disordered or weakened, the milk will be more or less imperfect: grains, or other unnatural food, will probably produce the same effect. Cold and wet situations not only weaken the whole system, but more especially the digestive system, and thereby render bad hay, and other unwholesome food, more injurious than it would otherwise be. An excellent treatise on sheep, has been published, entitled "A System of Sheep Grazing, and Management, as practised in Romney Marsh, by Daniel Price, of Appledore, Kent; 4to." by Sir Richard Phillips. And another by Sir George Mackenzie, 8vo.

DISEASES OF SWINE.

These are naturally omnivorous animals, but, by domestication, they may be made to live either on grass, grain, roots, or milk, or on animal food; but grain and roots, such as potatoes, are the best. They possess digestive organs of great strength, which are seldom diseased. They sometimes appear ill, and without appetite, from gorging themselves with food, but soon get well, by being kept without, or turned into a field to graze. They are subject, however, to inflammatory and eruptive disorders, both which require bleeding, purgatives, cleanliness, and cold air. Cold bathing is often useful to them. I have known several pigs destroyed by feeding them with sweet whey. The whey has been thrown into a trough from which all the pigs were allowed to feed. One or more of them, has at times sucked in the whey so greedily, as to get a great deal more than his companions, and so much, that fermentation has taken place, and so much air produced, as to blow up the stomach and bowels, and quickly destroy the animal. The best remedy is, to introduce a probang, as described for the relief of cattle that are blasted, hoven, or blown. (See Probang.) It should be of a small size, such as is used for blasted sheep; that is, about one yard in length: when this cannot be had, the following drench may be given: solution of potash, as prescribed for the cords in calves, 2 ounces, anodyne carminative tincture, 1 table-spoonful, or tincture of opium, or laudanum, 2 tea-spoonfuls, water, 8 ounces: mix for one drench. Clysters of salt and water will be found of great use, and may be thrown up with the common bone clyster pipe, and a calf's bladder, as for the human subject. When nothing else can be obtained, a solution of common salt, with a little ginger, or mustard, and a glass of gin, may be given. It is much better, however, to prevent this disorder, by giving each pig a proper quantity only of sweet whey, or by not giving them any, until it has undergone some degree of fermentation, and become sourish. Such whey has never been known to produce the disorder. Pigs that appear off their appetite a little, and unthrifty, derive great benefit from taking one dram of powdered antimony every day in their food.

Cutaneous Disorders, Eruptive Disorders, or Disorders of the Skin, Swine Pox, Measles, &c.

These diseases most frequently occur when many pigs are kept together, as at distilleries, and large breweries, and where they are fed principally on grains and such refuse as wash, which has undergone some degree of fermentation, and is possessed of an intoxicating quality. This is thought to dispose them to fatness; but it fills them with humours, and disposes them to eruptive diseases (such as measles, and swine pox) which become contagious, and sometimes very destructive. Whenever grains are given, whether to horses, cattle, or pigs, they should be fresh, and given with moderation, and should form only a part of their diet. Sweet whey, as has been observed in the preceding chapter, has been the means of destroying many pigs, by blasting them, but, if given with moderation, and after being kept a short time, proves very wholesome food. Want of cleanliness, and want of fresh air, no doubt, conduce towards the production of eruptive diseases; but the food, I believe, is the material cause. These disorders, like the exanthemata of the human body, are often attended with fever of the inflammatory kind, which may be relieved by bleeding and purging; yet these are seldom effectual, unless assisted by cool air in an open field, and that is the situation they should always be placed in, for grass is on such occasions the best food they can take. After recovery, they should still be kept out, and if any other food than grass is given, it should be skimmed milk, with a little bran, or gurgins, or small quantities of whey. The remains of the eruptions may be removed, when the pig has acquired sufficient strength, by washing with soft soap and water, and turning him into a good bed of clean straw immediately after. The most easy method of bleeding pigs is by cutting off the tail, or part of the ear, by making an incision in the nose, or roof of the mouth, or by cutting them between the claws, a little above the division. I have just been informed, that pigs will feed and do well on the spent hops of the breweries.

◆

Purging Powder for Pigs.

Jalap, 1 dram. Should this be found insufficient, 10 or 12 grains of scammony may be added, or 10 grains of calomel; but it is better, perhaps, to try the jalap alone first. It is difficult to drench a pig, but, if it can be done, a solution of Epsom salt may be given, with a little castor oil, or an infusion of senna; probably a solution of common salt would do, when there is nothing else, especially if a little oil be given with it.

DISEASES OF DOGS.

DISTEMPER.

This is a disorder which attacks young dogs at different ages, from two months old to the time of their completing their growth. Most commonly, I believe, it appears between the third and sixth month. It is an affection of the mucous membranes, highly inflammatory at its commencement, and succeeded by excessive debility. The symptoms vary considerably according to the parts where the disorder predominates. If the mucous membranes of the nose are affected, there is a discharge from the nostrils and eyes, frequent sneezing, great heaviness, and want of appetite. If the mucous membrane of the lungs is the principal seat of the disorder, there is a frequent cough; difficulty or quickness of breathing, discharge of frothy matter from the mouth, the cough exciting efforts to vomit, in which thin frothy mucus is thrown up. When these membranes, that is, of the lungs, and of the nose, are much affected, there is, at the same time, a considerable determination of blood to the vessels of the brain, occasioning comatose, symptoms, such as heaviness and sleeping, or delirium and fits. When the mucous membrane of the stomach is principally affected, there is sickness and vomiting of food, whether liquid or solid, as soon as it is taken in, attended generally with costiveness. And, when the mucous membrane of the bowels is the seat of the disorder, there is diarrhœa, griping pains, and sometimes very severe fits. Through improper treatment those symptoms generally increase, and the animal sinks into an incurable state of debility. Some of stronger constitutions get over the shock, but are left in a state unfit for the sports of the field, from an effusion of water into one of the ventricles of the brain, constituting hydrocephalus, but in different degrees, sometimes destroying life after a short period, more commonly, however, rendering the animal liable to attacks of epileptic fits on a sudden exertion; or from any thing which causes an unusual determination of blood to the brain, such as considerable exercise, high feeding, or costiveness, and almost always causing a spasmodic affection of some of the muscles on one side of the body, always opposite to that of the affected ventricle. I am inclined to believe, that there is only one certain remedy for this disorder, that is, copious bleeding at its commencement, and tying up the dog without food for a considerable time; not less than a whole day. After this, he must be fed with the greatest care imaginable. His diet for some time should consist of gruel made of arrow root, sweetened with a little sugar. This must be continued until the mucous membranes are restored to health, and then he must return to his usual diet and exercise as gradually as possible. I believe this mode of treatment is practised by very few. I was first informed of it 17 years ago, by a nobleman who then resided in the north of Devonshire, but I had then no opportunities of trying it. I have since heard that a farrier at Honiton, practises it with uniform success, but he also gives some purging composition, of which aloes is the principal ingredient. I have since had an opportunity of trying it myself, and found it successful. I bled the dog (a pointer puppy), until he fainted, and gave, a short time after, a few grains of antimonial powder; probably James's fever powder would do better. We hear of many infallible recipes for this disorder, but seldom or never find them so on a *fair* trial. That I have recommended, if employed early and properly, is, I believe, the best. A seton in the neck is a good thing, especially when the eyes are much affected. The best method of preventing the distemper, or of rendering the attack less severe, is to keep the dog from too much animal food, and give him a little opening medicine when he is costive, such as jalap, or calomel, or both. When the eyes look red and dull, and the head heavy, this opening medicine is very useful. Young dogs, or puppies, should be kept from the water, especially such as are of tender constitutions.

Asthma.

Dogs are subject to a disorder similar to the asthma of the human subject, which is generally occasioned by an accumulation of fat about the heart, or by a frequent distension of the stomach by food, so that its capacity becomes increased, and a morbid or depraved appetite is the consequence. The only remedy for this complaint is abstinence, properly conducted, and feeding upon pure and easily digestible food, such as well boiled horse flesh, or other animal food, or such as has hung a sufficient time to become tender: oatmeal gruel, made with milk, is excellent food for an asthmatic dog. Some opening medicine may be occasionally required, for which purpose the following pill may be given:

Jalap and rhubarb, of each from 10 to 20 grains; Ginger, 3 or 4 grains; Soap, 10 grains; Water enough to form them into a bolus. One dose. To be given on an empty stomach, and the dog kept without food for two or three hours afterwards. No other medicine is required. The disease is incurable, and can only be thus alleviated. Should this dose prove insufficient to open the bowels, add 3 or 4 grains of calomel.

Cholic, or Gripes.

Dogs are subject to griping pains of the bowels, almost always from costiveness. Clysters and castor oil are the best remedies. The oil, however, should be given in the dose of a table-spoonful every hour, and the clysters repeated from time to time, until complete relief is afforded.

Cough.

Dogs are subject to a troublesome cough, which often excites a kind of vomiting, causing them to throw up a little frothy mucus. It arises entirely from indigestion; they should therefore be fed accordingly; and, if they run about loose, they should be muzzled. If they become costive, a tea-spoonful of salt, dissolved in a little milk and water, may be given, or the bolus prescribed in a former chapter. A strong solution of salt, given as a vomit, sometimes affords relief.

Diarrhœa, or Looseness.

This is always occasioned by improper feeding, and sometimes by a secretion of acrid bile. Tying up the dog without food for some time is a necessary remedy, and sometimes sufficient; if not, small doses of Epsom salt, dissolved in gruel, should be given. If attended with severe griping pains, about twenty drops of tincture of opium may be added.

Dropsy.

This disorder is incurable, but may be alleviated, sometimes by a dose of calomel and jalap; after which small quantities of tender animal food may be given; and small doses of salt, which will act both upon the kidneys and bowels, and at the same time promote digestion. It may be given with their food in sufficient quantity only to make it palatable. Tapping may afford some relief, especially in encysted dropsy.

Fits.

These are generally a symptom of hydrocephalus, and sometimes of worms and obstructions in the bowels, in the former case, they are incurable, and can only be alleviated and kept in check, by avoiding every thing which tends to determine too much blood to the brain. Costiveness, therefore, should be guarded against, and an abstemious diet is always proper. Violent exercise is very injurious, but such as is moderate is beneficial. A little opening medicine may be given occasionally. Hydrocephalus in the dog is almost always a consequence of distemper or worms.

WORMS.

Dogs are subject to two kinds of worms, viz. ascarides, and a small species of leech-worm. These may be destroyed, or expelled, by different medicines. Oil of turpentine will both kill and expel them. Jalap and calomel will expel the ascarides, but not the leech-worm. The following drops, and bolus, however, if given carefully, will not only expel and destroy them, but will also destroy them in the blood; and that is the source from which they are derived. Ascarides are of various sizes, from those named teretes, or round worms, which inhabit the small intestines, to those named ascarides, which are found even at the fundament. This subject is one of importance; for I have discovered, that in a village, where I have occasionally resided, named Oak-hill, where all the water, with which the inhabitants are supplied, flows over the surface through fields--that the inhabitants are very subject to worms, and several of them to tape-worm, and that many of their domestic animals are infested with this small species of leech-worms. I have known long tape-worms brought off from several of the inhabitants, and have found the small leech-worm after death, in the small intestines of their domestic animals; even in the dog and the cat. Horses I find, especially when affected with mesenteric consumption, have generally got them. The longest leech worms are those found in the bowels of the dog and the cat, where they are well supplied with chyle, though the habitation is much smaller. In the consumptive horse they are generally small, and I have seen them literally starved, and full of grumous blood. “I should not have noticed the circumstance of the inhabitants of this village, and their domestic animals, being infested with this kind of worm, had they not possessed a convenient spring of excellent water at a short distance, where, perhaps, they may get supplied with little trouble, and often, perhaps, with salutary exercise.

Recipe for Worms.

Take of oil of turpentine, half an ounce, pour it into the throat carefully, and give, three or four hours afterwards, 1 ounce of castor oil: oil of turpentine may be given mixed with castor oil, to dogs of delicate constitutions, or that appear to have weak stomachs. Filings or fine scrapings of pewter have been found to destroy worms in dogs,—the dose about as much as will lie on a shilling: calomel and jalap will expel worms from the bowels, especially if a little Ethiop's mineral, about a dram, be given for three or four mornings or evenings previously. This worm, which I consider as a species of leech worm, I have named in my third volume, the ribbon worm; from its resemblance, when extended, to a very narrow ribbon, in which the transverse threads appear. But it seems to attach itself like the leech, and probably feeds upon blood, or chyle, according to its necessities. I have lately had some of these worms brought to me, that were voided by a man.

Mange.

This disorder is very common in dogs, and may generally be cured by rubbing in the following liniment, keeping them on a wholesome diet, chiefly of vegetable food, and giving them now and then a little opening medicine. The mange is known by the dog almost constantly scratching himself, and by the skin appearing moist, and sometimes scabby. The dog should be well scrubbed with soft soap and water, or tobacco water, and well wiped with a dry cloth immediately after. When quite dry, apply the mange liniment, taking care to rub it well on every part. There is an obstinate kind of mange, in which the skin appears of a bright red colour, and sometimes scabby also. Here some internal remedies are required of the alterative kind, such as Ethiop's mineral, calomel, or even very small doses of sublimate, (from 1-8th to 1-4th of a grain.) Mange is sometimes extremely obstinate, and terminates in dropsy or consumption.

Mange Liniment.

Sublimed sulphur, ...	1 ounce
Train Oil, ...	4 ounces
Oil of Turpentine, ...	½ ounce—Mix.

Diseases of the Eyes.

Dogs are subject to inflammation of the eyes, which is generally caused by eating too much animal food, and by violent exertion. A purgative of jalap and calomel should be given, and after that the dog should be kept on a spare diet. Eye washes, such as a weak solution of acetate of lead, of zinc, or sulphate of zinc, may also be employed in such cases. Old dogs sometimes become blear eyed, and then a little vinous tincture of opium, or brandy and water, is a good wash for them, or 1 dram of white vitriol dissolved in half a pint, or twelve ounces of water.

Strains.

Dogs are sometimes strained, but it is an accident that does not occur frequently. Whenever it does, the dog should be bled, have a little opening medicine, and then remain tied up, until he is perfectly recovered. If any part of the hind or fore leg is inflamed and swollen, it should be fomented frequently. A low diet is proper. When strains have been neglected, and callous swellings have formed, in consequence, about the joint, I have seen firing do good; therefore it should be tried. The firing iron must be used with much care upon this animal, for the skin, which is very thin, should never be penetrated.

Costiveness.

This disease is very common to old dogs. Clysters are very useful, and the best purgative for them is calomel and jalap. Bones are bad food for them; oatmeal gruel with milk is the best food.

Inflammation of the Bowels.

This disorder generally depends on costiveness and flatulency. The dog should be bled largely, and clystered; and if the griping pains are severe, about twenty drops of tincture of opium should be given, with about one ounce of castor oil; the dose must be repeated once or twice, if necessary, and the clyster several times.

Sore Claws.

The best remedy is a poultice, or bathing them well with an old dish-clout, in warm greasy water. Afterwards the dog should be tied up until quite well.

Inflamed Lungs.

This disorder is known by very quick breathing, hot and dry nose, redness of the eyes, and loss of appetite. The dog should be bled until he becomes faint; afterwards, a dose of calomel and jalap should be given, unless there are [illegible] griping pains and costiveness, then castor oil and clysters will be proper.

Inflamed Stomach.

In this disorder the dog is constantly [illegible] ing, especially after taking food, whether [illegible] or liquid. Bleeding and abstinence [illegible] only remedies. It is often followed by diarrhœa, which never should be suppressed by opium. Arrow-root gruel will serve both as food and as a remedy. If it causes vomiting, no more should be given; abstinence, in that case, is the only remedy.

Injuries of the Mouth from swallowing Bones.

Dogs that feed much on bones, especially hard bones, are apt to have them stick about the mouth, and the jaw bones are sometimes considerably and incurably injured in this way. The means of prevention in this case are obvious, and should be attended to. When a bone is sticking in the mouth, it sometimes causes efforts to vomit, and the dog will be seen making ineffectual efforts with his paw to remove it. The easiest way of removing it, is by the fingers, or a pair of forceps. When caries of the jaw bone has been thus produced, the diseased bone should [illegible] scraped with a small drawing knife, or other [illegible] instrument, and then a little tincture [illegible] should be applied, or a solution of [illegible] by means of a little lint wrapped round [illegible] of a probe.

DISEASES OF POULTRY.

The disease most worth noticing in poultry is one which sometimes affects turkeys, and by which a great number are at times destroyed. The nature of this disorder I believe is not known. I have found nothing in the body of the bird to account for it. The common remedy, however, is sometimes effectual; and that is, pulling out the feathers of the tail, as soon as they are found to be sick. The same remedy will be found useful in all kinds of poultry. Worms are sometimes found in the windpipes of turkeys, deposited, probably, by flies about the nostrils. They always destroy the bird; but if a little train oil be rubbed over its head, the flies will not come near it. The worms, however, may be generated within the windpipe and its branches, as they sometimes are in asses, and sometimes, but more rarely, in horses. These are all the diseases of poultry that I am acquainted with, except such as are produced by improper feeding; in all such cases, the means of prevention and cure are sufficiently obvious. The climate or temperature in which they are kept, should always be suited to the nature or strength of their constitutions. I have known a turkey feed so greedily on peas, that he was nearly suffocated, and must soon have died, had not an opening been made in his crop with a penknife, and the peas taken out. The crop was sewed up again, and the bird perfectly recovered. Attention to feeding, and the state of the digestive organs, will be found as advantageous in poultry as it is in other domestic animals. It is probable that opening medicine would sometimes be of use to them; but what would best answer this purpose, or what mode of feeding is most profitable, can only be determined by experience. Grass, perhaps, is a good purgative, and bruised or powdered grain better than whole grain. Cooping may be found at times rather an impediment to fattening, especially in birds that have been accustomed to liberty. Solitude may also be injurious; cheerfulness in all animals contributes much towards healthy digestion; therefore, even poultry should be treated with kindness, and their comfort should be attended to.

GENERAL OBSERVATIONS ON FATTENING CATTLE, AND OTHER DOMESTIC ANIMALS USED AS FOOD.

It is considered as an established fact, that cattle of a certain form will fatten more readily than others; and the form most desirable is a wide, deep, and capacious chest, small head and legs, the tail fine, and going off nearly in a line with the back. There are other points well known to butchers and graziers, but not easily described. The capacious chest is favourable to easy breathing, and easy breathing is thought to conduce towards easy digestion; and it is almost superfluous to observe, that the nearer the digestive process approaches to perfection, the more speedily will the animal become fat. A disposition to fatness may be greater in some breeds than in other, but it is reasonable to infer, if we are allowed to depart at all from the path of experience or actual trial, that breeding from healthy parents is a circumstance of the greatest importance, and the first step towards improvement in breeding and grazing. In breeding milch cows, it is known to be of importance to cultivate the temper or disposition; for it has been found that cows of a quiet, gentle temper, produce more milk, and yield it more readily, than such as are of a contrary disposition, supposing them to be alike in all other circumstances. Now it has been ascertained, that milk is nothing more than chyle; that it is formed in the fourth stomach, and conveyed to the udder by a peculiar order of vessels. The quantity and quality of the milk, therefore, must depend upon the facility and perfection with which the food is digested. When the cow is suffered to go dry, instead of milk, we have an increase of muscle, or flesh and fat, and of all other parts, but chiefly of the two former, and especially the second.

Quietness of temper, then, may be considered as a desirable circumstance in animals designed for grazing. In cultivating the temper we cannot begin too early, and, by so doing, we render young steers more docile and tractable, when wanted for the plough or other labour. The good disposition should be carefully cherished, while they are employed in the labours of agriculture, by kind and humane treatment. Such management will enable them to do their work better, and with more ease; they will be less liable to disease also, and their food will do them more good, and give them more muscular power. When put up for grazing, they will be found to fatten more quickly than such as are of a different temper or disposition. When the disposition of young steers that are wanted for the plough, is found to be bad and trouble-blesome, they should be corrected with care. The most patient and steady men will be found most capable. It was well observed by Lord Pembroke, in his excellent work on Military Equitation, and breaking of horses, that whenever he saw a rider in a passion with his horse, he was sure to find him more to blame than the animal. It is astonishing what advantage is obtained by attending to the disposition of colts, even from the time of weaning. It must be admitted that there is a great difference in the natural disposition of animals; but gentleness and docility are in a considerable degree hereditary, which is a circumstance that should always be attended to in breeding. It may be safely laid down as a general rule, that a man of a hasty, impatient, or passionate temper is an unfit person to correct the temper, of young animals; a man of a cruel disposition is still more unfit. Such an employment requires patience, evenness of temper, and perseverance. As to the food most profitable for fattening cattle, there cannot be a doubt, I believe, that grass is the best, provided they are not put too hastily into rich pasture; inattention to this circumstance, or, as it is termed, forcing cattle too much, is the cause of serious disorders. The practice of tying up or stalling working cattle is bad; they are hardier, and have more muscular power, when suffered to exercise themselves and pick up a little green food in the fields. It is a false or mistaken economy to keep them on unwholesome food, such as bad hay; it reduces their muscular power, and does considerable injury to their digestive organs. Next to good grass, good hay is the best food for them; that is, hay that has been made early, is of a light green colour, fragrant, and full of herbage. Hay that has been made late, is stalky, dry, and fibrous, is greatly deficient in nutriment, and difficult of digestion. Hay that has been soaked by the rain has had most of its nutritive juices washed out of it, and what is left consists in a great measure, of indigestible fibres. Har stalky hay, that abounds in docks and thistles, is apt to injure the gums and grinding teeth and thereby render rumination painful and difficult, and consequently imperfect. When young stock are put up for fattening, it is of importance that they should be healthy, and especially that the digestive organs should be so. When they are otherwise, the best thing to be done is to turn them into a bare, but sweet pasture, and keep them there a considerable time. The stomachs will then acquire strength, and the digestive power will be restored. With regard to stall feeding, it is a subject that requires careful consideration, and I think it likely that the method often adopted will admit of improvement. I have known several beasts destroyed by feeding on potatoes, at a time when potatoes were remarkably cheap, and, on that account, given too freely. Bad or indifferent hay should never be given. Oats should always be bruised; when given otherwise, and especially when given alone, they are difficult of rumination and digestion, and I have seen them prove quite indigestible, and productive of a serious disorder, which required the opening drench, No. 1, for *red water*, and a clyster of salt and water. In two cases the oats were discharged by means of the opening drench, almost unchanged, and not soft and swollen as they are often found in the dung of horses. After this, the cows quickly recovered. Previous to fattening a milch cow, she should be kept for a considerable time in bare pasture, after which she will fatten more readily than she otherwise would, and be much better meat. When cattle are stall-fed, it would be a good plan to give them an opening drench occasionally, and if they appear dull and heavy about the eye, some blood should be taken off. A little exercise now and then would promote digestion, and tend to the preservation of health. Habit, however, has great influence in reconciling animals to such confinement, and they are not so often hurt by it as may be expected. Habit has the same influence in reconciling the stomach to potatoes, bruised beans, and other food, which, unless given at first sparingly, and with care, would prove very injurious. The best opening drench is 4 ounces of common salt, half an ounce of aloes, 2 drams of ginger, half a pint of ale, and a pint and a half of water: about 2 or 3 drams of soda would be an useful addition. In fattening calves from the pail, the milk cannot be too fresh; it becomes less easy of digestion, and less nutritious, in proportion to the time it is kept. When the milk cannot be had quite fresh, or when the calf seems indisposed and loose in the bowels, a little powdered chalk may be added to it. Too much milk is sometimes given at a time, by which the stomach is oppressed, and digestion interrupted. A little abstinence is useful on such occasions; and the following opening drench: common salt, half an ounce to 1 ounce; aloes, 1 dram; soda, 1 dram; ginger, half a dram; water, half a pint; gin, a table-spoonful. (See *Diseases of Calves.*)

I have seen lambs fattened in December, by keeping several of them together within doors, and bringing the ewes to them to be sucked morning and evening, or three times a day. In the intermediate time they had placed before them small troughs containing barley or oatmeal, mixed with a little powdered chalk. They were thus fattened in a short time, and made excellent meat. The ewes should be allowed the very best hay, with the best grass they can get.

In fattening pigs there does not appear to be much difficulty, and the only thing thought necessary is to give them as much food as they can eat. It is as necessary, however, in this, as in other animals, to keep the stomach in a healthy state, for if this vital organ is disordered, the most nourishing food will do them no good. (See *Diseases of Swine, or Pigs.*)

The most profitable pigs for the farmer are such as will live and thrive at grass. These possess great energy of stomach, and make excellent pork. Pigs have generally too much food given them at a time, and that, too, liquid. Potatoes and skimmed milk make an excellent diet for them, if given carefully, that is, a little at a time. I have known a spayed sow that was very poor, made fit for exhibition at the Meeting of the Bath Society, in three months on this food. There is great variety, however, in the digestive power of these animals; some of them fatten quickly on food that would not do so well for another. But whenever the stomach appears weakly, and they do not seem to thrive, the best plan is to turn them to grass for a short time, and feed them afterwards with great care. Pigs have been often *blasted*, as it is termed, and have died in consequence, by giving them too much sweet whey at a time; too much milk or potatoes is liable to produce the same effect. Greedy or voracious pigs are not the most readily fattened, and if not restrained or limited in food, and especially in the articles I have just mentioned, are very liable to indigestion, or flatulent colic, which may produce inflammation of the bowels, or suffocation. When pigs that are put up for fattening, do not appear to feed well and thrive, 1 dram of powdered antimony should be given daily in their food.

BLEEDING.

In all inflammatory disorders bleeding is of the first importance, and cannot be performed too early. A careful observer is able to perceive the approach of inflammatory disorders, and by bleeding, and change of pasture, prevent them. Whenever bleeding is necessary it should be done freely. One large bleeding, that is, until the animal becomes faint, or even until he reels, or drops down from faintness, will generally crush the disorder at once; whereas, several small bleedings will only keep it in check for a time, till at length it becomes changed into a chronic complaint, or terminates in dropsy. Two gallons of blood may generally be taken from a heifer or steer, or even from a milch cow. The quantity, however, should not be so much regarded, as the effect it produces on the animal. I have seen a heifer reel after bleeding, and fall down from faintness. After lying some time she got up, and appeared panting and trembling, but soon recovered perfectly without taking any medicine, except a little whey. In severe wounds, bruises, or other accidents, the animal should always be bled freely. The only occasion on which local, or topical bleeding, as it is termed, is useful, is in that kind of foul in the foot, or low, which is attended with painful swelling, and a high degree of inflammation. In this case, the vein, or even the artery that goes to the claw, may be opened; or the animal may be bled in the toe with a drawing knife, as is done in horses Sheep are commonly bled by cutting the tail or ears, or by making an incision in the nostril. When the head is affected, they are bled in the eye vein, but from neither of these parts can a sufficient quantity of blood be obtained, or at least very seldom: therefore, they should never be practised Sir George Mackenzie, in his Treatise on Sheep advises bleeding in the submaxillary vein, which passes over the angle or edge of the under jaw bone; but, as this vein is closely accompanied with the submaxillary artery, and the excretory duct of the great salivary gland, situated under the ear, the operation is hazardous. Sheep should always be bled in the neck vein, with a small fleam, or lancet. The neck should be corded, and the operator having placed the animal between his legs, should keep the head on one side, in order to put the vein on the stretch. In this position it is easily opened, either with a fleam, or lancet, after removing the wool, but there is no occasion for cutting away any wool. I have seen a whole flock of sheep bled very quickly in this way, and I have bled them myself both with a fleam and lancet. The quantity of blood taken from this flock of sheep was one pint. Two or three of them fainted, but recovered in a few minutes. Dogs are bled in the same manner, and may be bled to faintness without danger. Pigs are not so easily bled, and probably do not so often require it, notwithstanding the improper quantity of food that is sometimes given, especially of animal food, such as the bowels of the animals that are slaughtered, also blood and horse flesh. Some pigs in eating the bowels of a glandered horse that had been taking arsenic, or sublimate, were poisoned by it. When pigs are thus fed, they are generally allowed to run about orchards; but when butchers' pigs are kept on sheeps' bellies, and other refuse parts from the slaughter-house, they never make good pork, though well cleansed, as they call it, afterwards. They are more subject to inflammatory and eruptive disorders than other pigs. Pigs are bled by cutting the ears or tail, or roof of the mouth. And if sufficient blood cannot be thus drawn, they should be turned to grass, and have no other food for a few days.

DRENCHES.

The drenches commonly given to cattle consist either of pungent acrid drugs, such as grains of paradise, ginger, long pepper, birthwort, &c.; aromatic seeds, such as caraway, anise, cinnamon, and sweet fennel; oily and mucilaginous seeds and roots, such as linseed, fenugreek seeds, marsh-mallows root, and elecampane; bitters, such as gentian, and that ancient composition, name *diapanté*. Castile soap is often employed; and electuaries containing cordials and opium; or astringents, such as venice treacle, and diascordium. The most common vehicle is a quart of ale. Sometimes gruel is prescribed, or stale urine. And some writers have prescribed a pint of port wine at a dose, which, with the drugs to be mixed with it, would cost five or six shillings. Now, the only drugs really necessary for the internal diseases of cattle, are the following; and these may be rendered almost or altogether unnecessary, if the advice contained in this little book is carefully attended to.

A List of Drugs used in Cattle Medicine.

Barbadoes aloes, ginger, Epsom salt, common salt, catechu, allspice, caraway seeds, nitre, castor oil, opium, carbonate of soda, carbonate of potash, beer, brandy, or gin.

No other than Barbadoes aloes should be employed. Ginger, allspice, and caraways should be powdered when wanted, or not kept long in powder, unless it be in well corked bottles. When castor oil is not at hand, or cannot be afforded, sweet oil, or new butter, with the whey in it, may be substituted. The best method of giving opium is in the form of the anodyne carminative tincture, and if this is not at hand, tincture of opium or laudanum may be employed. The latter contains twice as much opium as the former. When beer is employed as a vehicle, it should be of the best kind, and not stale or harsh. It is an excellent cordial by itself, but is improved by a little allspice and caraway seeds, and sometimes by a little ginger also.

It is much better to give a moderate dose of cordial medicine, and repeat it every morning, and for a few days, than the large doses usually prescribed by writers on cattle medicine. The latter are apt to injure the stomach, though they may afford temporary relief. The effect of the former is often permanent, for, by keeping up the tone of the stomach for a few days, a more perfect digestion takes place, better chyle is formed, and consequently a more pure or richer blood. By such blood the stomach, as well as all other parts of the body, becomes strengthened, and the brain, the source of nervous energy, participates in this general improvement. The dose of beer I usually give is half a pint, with a dram of ginger, 2 drams of allspice, and 3 or 4 drams of caraways. These ingredients should be first steeped, or gently simmered, for a few minutes, in half a pint of water or table beer. When a cordial astringent is wanted, 2 drams of catechu are added. Aloes and common salt are the best purgative for milch cows, especially when the stomachs have been weakened, as they often are, by feeding on bad hay. It is necessary on such occasions, to add some cordial medicine, such as ginger, and a little of the anodyne carminative tincture, or, when that is not at hand, a glass of gin; 4 ounces of salt require to be diluted with a quart of water.

I would advise every proprietor of cattle to keep the anodyne carminative tincture, and a compound powder of aloes, made of 4 parts Barbadoes aloes, and 1 part ginger; 2 or 3 drams of carbonate of soda is an useful addition to opening drenches. Some cordial powder may also be kept in a well corked bottle, composed of 1 part ginger, 2 parts allspice, and 3 or 4 of caraways; 2 drams of catechu, added to a dose of this cordial powder (6 or 7 drams) form the cordial astringent powder. Two drenching horns should be kept, one of a large size for cattle, and a small one for sheep and calves. I forgot to include in my list of medicines, the solution of potash, which I have prescribed for indigestion, or cords in calves. This is easily made, and should always be kept.

CLYSTERS.

THESE are too much neglected in the diseases of horses, and still more in the complaints of cattle, though they are of great use in both, and even if employed unnecessarily, cannot do any harm. When an animal is *blasted*, as it is termed, (See *Blasting*,) the stimulus of the salt water which forms the clyster, is propagated upwards, even to the stomachs, and greatly assists in the discharge of the confined air, as well as of any indurated excrement there may be in the bowels.

The only clyster necessary for this purpose, is a solution of common salt in water; one pound of salt to 4 or 5 quarts of water. The clyster pipe may be had of Mr. Long, Veterinary Surgeon's Instrument Maker, Holborn, London. And I would advise every proprietor of cattle to be provided with this instrument, with a large bullock's bladder firmly tied to it. Before the bladder is tied on, it should be soaked a few minutes in warm salt water; it should then be rubbed dry with a cloth, and when tied on to the pipe, it should be blown, and the air confined by corking the mouth of the pipe. In this way the same bladder will last a considerable time.

PROBANG.

This is an instrument for letting out confined air from the stomach, when cows or sheep are blasted, or blown, and may be purchased at the sadler's. In order to pass it down the throat, an assistant must lay hold of the nostrils, and keep out the head as nearly as possible in a line with the throat. The distance between the mouth and the nose is about six feet. The probang, therefore, must be more than six feet. In sheep, one of half that length would be sufficient. A piece of small cane, about two thirds of an inch in diameter, with a smooth wooden knob at the end of it, would answer the purpose for sheep. Three smaller pieces (of sufficient length), bound together with waxed pack-thread, and a smooth knob at the end, would answer the purpose for cattle. All proprietors of cattle and sheep should be provided with these instruments.

FOMENTATIONS.

HOT water, with a little oil or grease in, is as good a fomentation as any.

ESSAYS

ON

THE STRUCTURE, ECONOMY,

AND

DISEASES,

OF

HORNED CATTLE, AND SHEEP;

BEING

A SERIES OF COMMUNICATIONS,

SENT TO THE

BATH AND WEST OF ENGLAND SOCIETY,

FOR THE

Encouragement of Agriculture, Arts, Manufactures,
and Commerce.

PREFACE

TO

THE ESSAYS.

In the year 1817 I attended the annual meeting of the Bath Agricultural Society, and was introduced by my friend, Mr. Jillard, to many gentlemen, eminent for their knowledge of agricultural subjects. I then promised to devote such a portion of my time to an investigation of the diseases of cattle, as would enable me to do something towards the improvement of that hitherto neglected branch of the veterinary art. The following Essays, and the preceding Compendium, are the result of that investigation. The Essays may be thought somewhat irregular, and to contain some repetitions, yet they will form but a small addition to the Compendium; and will be found useful, not only by the practical observations they contain, but by the new and diversified manner in which the subject is arranged. Some parts of the present Essays are designed for professional readers, for it is from such that further improvement is to be expected; and I hope that the view I have given of the structure and economy of the digestive organs of the cow, will induce such readers to reflect on the subject, and see in it the basis of all useful knowledge of the subject. If they proceed from this to a consideration of the blood, and the importance of its purity to the health of the body; if they view it still more profoundly as the source of vitality, and as affording to the brain and nervous system that support on which their power depends; they will be led to a conviction, that by good management, with respect to *food*, *water*, *air*, and *exercise*, almost all the internal diseases of cattle may be prevented.* From this they will be led to reflect on the mischief that results from the too general practice of feeding them on bad hay during the winter, and of tying them up during several months of the year. The first of the farmers mentioned in the foregoing note assured me, that he had found great advantage in letting his cows exercise themselves in a large wholesome farm yard, instead of tying them up in winter. They gave more and better milk. The hay given to milch cows

---

* I have lately had the honour of spending a day with Dr. Jenner, that amiable and illustrious physician, whose invaluable discovery has proved such a blessing to the world. The Doctor condescended to converse with me on the diseases of cows; and informed me, that giving wholesome water to those animals, was of more importance than the public is aware of. He told me there was a farm in the neighbourhood, where three or four farmers had sustained so much loss from abortions in their cows, from red water, and other diseases; that they were either

---

ruined or obliged to give it up. The present occupier suspected that the water they drank was the cause of the mischief, and therefore sunk three wells on different parts of the farm, and pumped the water into troughs for the cattle. The ponds were fenced round to prevent them from getting at the water, so that they drank only from the troughs. Since that time the farmer has not had a single abortion (termed warping in Glostershire), or one case of red water. His cattle have been free also from swelled udders; and, what is of great importance to a Glostershire farmer, he makes more cheese, and his cheese is greatly improved in quality. The Doctor wished me to visit this farm, which I did, and another at a short distance. I found that the usual mode of watering cattle where there was no brook, or running water, was from a pit of stagnant rain, or spring water, to which the cattle had access by means of a sloping path on one side only. It has been observed that cattle, immediately after drinking, dung and make water; sometimes in the water, or close to it; and almost always before they leave the sloping path. The dung and urine therefore flow into in Glostershire, is better than it is about Mendip, where they cut often after the seed is formed, and sometimes after it has become ripe. This is the source of much mischief. There is scarcely a farmer that will not admit that good hay can be obtained only by mowing early; yet scarcely one who will mow until he can obtain the largest quantity, without any regard to quality. The great object of his attention is to dry it at as little expence as possible, considering good weather as the only object worth attention. This,

---

the pond, or are washed into it by the rain, and make the water so impure, that it has been found to kill eels, and nothing but noxious insects can live in it. The disgust which such water must excite in animals accustomed to drink from brooks, is gradually overcome in a great measure, and they sometimes drink it without appearing to suffer; but the influence it has upon the animal's health is strikingly shown on this farm. On visiting the other farm, where the cows had been prevented from drinking this pond water only six months, the beneficial effect of drinking wholesome water was sufficiently obvious, to demonstrate its utility. Before that time, they were frequently meeting with red water and swollen quarters, i. e. a swelling of a part of the udder: but since the cows had drank pure water, not one case of either had occurred. Since my return to Oak-hill, which was only yesterday, I have heard of a farmer at Whitchurch, who has discovered that giving his cows wholesome water is essential to their health, and to the goodness of their milk, butter, and cheese.

however, is a subject for agricultural writers, and well worth their most serious attention. Another useful object I trust will be accomplished by the view I have given of the subject; it will lead the reader to see the absurdity of the expensive recipes contained in books on cattle medicine, and employed by cattle doctors. Notwithstanding what has been said on the importance of the purity of the blood, I have endeavoured to impress on the reader's mind the necessity of early and copious bleeding in all inflammatory disorders; for it is in such diseases that the common practice almost always fails. I have taken two gallons from a heifer, and thereby saved her life. Cow doctors rarely take more than two quarts. The prevention of disease is, however, by far the most important object, and consists in giving the animal wholesome food, proper shelter and exercise during winter, and wholesome water at all times.

JAMES WHITE.

Oak-hill, near Bath,
Sept. 1821.

ESSAY I.

INFLAMMATION OF THE LUNGS IN SHEEP.

THE most frequent and the most fatal disorder of sheep, next to the rot, is inflammation of the lungs, which occurs very commonly in the month of April, when the sun during the day is at times very powerful, and the nights and mornings are extremely cold. Lambs often die of this disorder, which they get by frisking about and overheating themselves in the hot sunshine. I was requested last spring to attend some sheep, belonging to Mr. Baker, a respectable farmer of Wookey, who, out of a flock of three hundred sheep, had lost between fifty and sixty. On opening some of those that died, I found that the disorder which had occasioned their death was inflammation of the lungs. I found upon enquiry that the treatment employed had been bleeding, and leaving them then wholly to nature. Their bleeding, however, consisted in cutting the ears, the nostril, or the lip; in which manner only a small quantity of blood could be obtained. I directed, or rather advised, that a pint of blood should be taken from the neck vein, in the same manner that it is from horses and bullocks. This was performed without difficulty, and without cutting off any of the wool from the neck; and then I desired that a table spoonful of Epsom salt, dissolved in a tea-cup-full of gruel, might be given; this also was done, and these were the only remedies employed. Three of the sheep that were extremely ill at the time, died, and those I believe, were all that were lost after this treatment was adopted; all the rest recovered and became perfectly healthy. It is to be regretted, that in this, as in most other disorders of cattle, curative means, and especially bleeding, are resorted to so late. In this case, had not bleeding been employed when it was, I have no doubt that the whole flock would have been lost; for inflammation of the lungs is sometimes of the catarrhal kind, and often infectious; which was the case in this instance. It is of importance in this, as in all other inflammatory disorders, that bleeding be employed as early as possible, and freely; that is, even to faintness. It is also essential that the animal be kept in the open air, and not put into a house, as is too often the case; for there is nothing that tends more to encourage inflammatory action in the system than a warm confined air. This practice is often repugnant to the feelings of the proprietor in the treatment of catarrhal affections, or severe colds, both in cattle and horses, for he generally imagines that warm air and warm clothing are essentially useful in those complaints; but this is a very pernicious error, as in all those complaints, whether it be a slight or a severe cold or catarrh, or even that epidemic form of catarrh named distemper, cool air, and in summer the coldest air, is of the most important use; and with the assistance of bleeding, and keeping the animal where there is but little grass, renders medicine unnecessary.

Wells, May 20, 1820.

P. S. Every sheep in the flock was bled in the above case, whether affected with the disorder or not. There were but few, however, that were not affected in some degree, and they were dying very fast. It was adopted, therefore, as an useful precaution, and so it proved; for every sheep, except the three which were before in a dying state, perfectly recovered. Bleeding, therefore, was in this instance a preventative, as well as a remedy. Other flocks in the neighbourhood were affected, and successfully treated in the same manner. The Epsom salt was given imperfectly, and not to the whole; and I am inclined to attribute our success, principally, if not wholly, to the bleeding. Some of the sheep fainted from the loss of blood, but soon recovered, and did very well. The quantity of blood taken off was a pint cup full, which weighed exactly a pound: the symptoms were hanging of the ears, dullness of the eyes, running at the nose, cough, and quick breathing.

ESSAY II.

ON RED WATER.

THIS disorder most commonly happens in the month of May or June, and though one of an inflammatory nature, is connected with, or dependant on a weakened or disordered state of the organs subservient to digestion, that is, the stomachs, and probably the liver also. Doctor Jenner has examined several cows that died of red water, and in all of them found the heart highly inflamed; whence he concludes that the discharge of blood with the urine is an effort of nature to cure the inflammation of the heart. I have just received a letter from an experienced farrier in Yorkshire, in which he states, that in cows which have died of red water, he has always found the kidneys in a very tender state, and sometimes enlarged, and that the contents of the third stomach are generally very dry. He states, also, that it is more severe in cows that have lately calved, in good milkers, and in old cows that have been good milkers, than in heifers, or young cows; and that he never found any difficulty in curing it in young steers, or oxen. In the beginning of May, he says, or soon after lying out, it is often very severe for a month or six weeks, especially when the weather is changeable, or when it is very hot. Cows that have been tied up during winter, he observes, are most liable to it. In the country about Proud Preston, in Lancashire, especially in low damp situations, it is very prevalent, and often fatal. The red water is there termed murrain, probably from so many cows dying of it. In sheltered and elevated situations it does not happen so often. In this country (near Leeds), it occurs in June, as well as in May. Cows that are brought from Yorkshire into Lancashire are "almost sure" to have the red water, or murrain, as it is there termed. The medicine employed by this farrier (Mr. Sumner, of Bristal, near Leeds) is a saline laxative, with aloes and caraway seeds; and this he gives whether the animal is costive or not. The following is his recipe.

Barbadoes aloes	6 drams
Glauber's salt	6 drams
Calomel	1 or 2 drams
Powdered caraways	1 ounce.

If the water is not better in twenty-four hours, he gives an astringent drench, composed of alum, acetate of lead, sulphate of iron, and caraway seeds; or starch and old milk boiled together, to which is added afterwards, 1 ounce of oil of turpentine, and 1 ounce of powdered caraways. The bowels, he observes, should always be kept open. The same observation is made by the farriers and dairy-men in Somersetshire, who generally give whey for the purpose in considerable quantity. Bleeding is not often employed in red water, yet there are cases in which I believe bleeding is necessary, and I think it probable that many of those cows that die of red water die from want of early bleeding. I have known it successful, when a cow on the same farm died under different treatment. A saline laxative, however, was given immediately after the bleeding. If many cows that have died of red water, have been found, on examination, with the heart much inflamed, as stated by Doctor Jenner, and Mr. Tanner, is it not a reasonable inference that they died from a want of early bleeding?

I am of opinion, that the common method of keeping and feeding cows during winter, that is, tying them up, and giving them bad hay, is the source of this and other disorders. By this treatment, not only the digestive organs, but the constitution generally is deranged or weakened; the vital power is more or less diminished, and the kidneys are relaxed, or its secretory vessels enlarged, by carrying off from the blood the excrementitious matter engendered by unwholesome feeding. This state of the body constitutes the predisposition to red water, and when the animal is turned to grass in May, the change of food excites a powerful appetite, and quickens digestion. It gives temporary energy to the system; but this is not of long continuance, especially if the digestive organs have suffered much, which is generally the case after three or four winters' bad feeding, or after a cow has had several calves, or has been a remarkably good milker, or if she has been kept much in a cold exposed situation, or is naturally of a weak constitution. Bad water is very injurious to animals, and especially to the milch cow; it is a fruitful source of disorder, as has been observed in the Preface to the Essays. (See *Preface.*) In the neighbourhood of Shepton Mallet a great number of cows have been cured of red water, by a drench composed of 2 ounces of tincture of cantharides, and 2 ounces of alum. In the neighbourhood of Wells they generally give 1 ounce of Friar's balsam, and 1 ounce of oil of turpentine. After this drench the animal has whey given her several times a day. Urine has been given with good effect, but I believe the drench I have prescribed in the Compendium, is by far the best remedy, except when the disease is clearly inflammatory, and then I prefer the following drench.

Epsom, or Glauber's salt ..	8 ounces
Castor oil, or sweet oil	4 to 6 ounces
Water, or whey	1 quart.

A change of pasture is always adviseable.

If red water depended on inflammation of the heart, tincture of cantharides and oil of turpentine, one would suppose, would be highly injurious; yet it certainly cures the disorder in the neighbourhood of Shepton Mallett, as I am informed by Mr. Bartlet, a respectable druggist of that place, who sells many drenches composed of this tincture and alum, and, on enquiry, he generally finds that they have effected a cure. I have seen the disease go off spontaneously, and am inclined to believe that it would often do so, if the animal were turned into bare pasture. In what other manner can we account for such different, and even opposite modes of treatment curing red water? My enquiry, on this subject, has been extensive, and carefully conducted, and though in every place I hear of an infallible recipe for the disorder,—for almost every druggist, as well as every cow doctor, professes to have a never-failing remedy,—notwithstanding all this, I find, that in every country where red water prevails, a considerable number of animals die of the disease, which is well known to those employed in kennels. Now, as Doctor Jenner has examined many of these animals at the kennel, and always found the heart inflamed, I cannot help concluding, that the death of such animals was either accelerated, or caused by the stimulating drenches employed, or by want of timely bleeding, and a saline laxative. All cow doctors, as well as writers on cattle medicine, appear to agree in one thing, and that is, the propriety of keeping the bowels open, and in admitting, that unless this is done the animal will certainly die. This is often done by giving whey, or whey that has had tallow or candles boiled in it, and by [illegible] the fundament, by introducing two fingers, and then separating them a little, so as to keep the sphincter open a short time. This affords relief, by allowing the hard excrement that obstructs the contracted gut to pass off. A clyster of warm water, with a little salt and oil, or salt water only, would be found, I think, more effectual. There is generally a purging in red water, that is, the dung is very thin, and almost fluid, and discharged with considerable force, in a stream scarcely larger than a tobacco pipe. This discharge is often interrupted by hard excrement, which appears to come from between the leaves of the third stomach. Giving the animal whey every three hours during the night, as well as the day, is therefore of great use. And it is no less so to introduce the fingers into the fundament now and then, lest the gut be obstructed by hard clots of excrement.

ESSAY III.

ON THE QUARTER ILL, OR QUARTER EVIL.

THIS disorder attacks cattle when they are about one year old, but sometimes rather later. It is a dangerous and destructive disorder, and known in some parts of England by other names besides the above; such as black leg, black quarter, shoot of blood, &c. It depends upon repletion of the blood vessels, and is brought on by putting the young animal, when in low condition, too suddenly into good pasture, or even into such as is moderately good. The same cause, in two or three year old stock, or in working oxen, will produce the inflammatory red water, or that which depends upon repletion of the blood vessels; because, in such stock, the kidneys have been previously brought into a relaxed and morbid state, by the habitual use of unwholesome food, or, rather, by feeding for several winters on such food. In younger stock, as yearlings, the kidneys are more healthy, and capable of resisting morbid impressions, or, rather, the too sudden influx of blood. In them the kidneys resist, equally with the other vital organs, until the heart and lungs are suffocated with blood. The approach of the disease is observed by the animal separating himself from his companions, appearing listless, heavy, and refusing his food; but it often comes on so suddenly, that the owner has scarcely an opportunity of observing what are the first symptoms, sometimes finding him dead before he has an opportunity of doing any thing for his relief. The immediate symptoms of the disorder are lameness, and swelling of the hind quarters, and, sometimes, of the shoulders and fore parts. These swellings, when pressed, make a crackling noise, from an effusion of air into the cellular membrane, occasioned by a putrid state of the blood; and I am now convinced that the disease is of a putrid nature, and highly contagious. Like other putrid disorders, it is, at its commencement, of the most highly inflammatory kind, and can only be cured by immediate and copious bleeding; that is, until the animal faints. Nothing short of this can do any good. When the swellings have taken place to any extent, it is generally too late to do any good; bleeding is the only remedy that stands any chance of affording relief, and should, therefore, always be tried, at whatever time the disorder is first perceived. The quantity of blood drawn should never be attended to, but the effect it produces, and that is faintness. It is almost needless to add, that this is an important disorder, and carries off a great number of young cattle: as is a fact well known from having been so often painfully experienced. But that it is contagious is a circumstance, I believe, that few farmers, or practitioners, are aware of. I am also inclined to believe that contagion is produced, not only from the living animal, but also from the dead carcase; and more especially from the latter, which should always be immediately buried, without having the skin taken off. I am of opinion, that murrain, pestilence, or pest, is, in its origin, precisely of the same nature as Quarter Evil; and were the latter disease to occur during a hot summer of long continuance, and were the animal suffered to die, (for he may be cured by early and sufficient bleeding,) and the precaution of burying the carcase immediately, unskinned, neglected, we might once more be visited by those dreadful epizootics, which formerly committed such ravages among cattle in this country, but more especially in the south of Europe. It is stated by Lancisi, that in the year 1813-14, about thirty thousand head of cattle died in the course of nine months, in the Ecclesiastical States of an epizootic, or contagious disorder, which then prevailed. There may be difficulty in persuading farmers to bleed to the extent I have recommended, but moderate bleeding will do nothing; and I can venture to affirm that there is no danger whatever in bleeding to faintness, and that in the Quarter Evil it will always be found effectual, if seasonably employed. Local applications are unnecessary, and the only medicine required, is from four to six ounces of common salt in a quart of cold water. This should not be given until the animal has been bled.

It has been the fashion, of late years, to make light of contagion, and the consequence has been the prevalence of fever, to an alarming extent. A similar opinion has prevailed with regard to cattle, and I have known very serious losses result from it. Such losses, I hope, will not in future occur. The remedy I have recommended, if employed in season, will, I believe, generally be found effectual. But should those, for whose use it is intended, be deterred from employing the remedy, on account of its formidable appearance, I trust they will not neglect the precaution I have suggested, in burying the dead animal, unskinned, as quickly as possible.

ESSAY IV.

ON FEEDING WITH OATS.

I HAD occasion to visit, a short time since, a very fine dairy; the best I think I ever saw. On examining the cows that were tied up to be milked, I found that each cow had a considerable quantity of oats before her, in a manger made for the purpose, without chaff, or any mixture whatever. On inquiry, I found that each cow was allowed half a peck twice a day, and that they gave but little milk. The business which brought me there was to prescribe for one of the cows, which I found labouring under what the cow-keeper called a *sort of a chill*, or a touch of the yellows. It was a well marked case of indigestion, attended with symptoms of flatulent colic, or gripes. The cow refused her food, and had lost her quid, as they term it, that is, was incapable of ruminating. She appeared to be in considerable pain, her back was drawn up, she was costive, and did not appear to have voided urine. She was very restless, and soon laid down again, threw her head round towards her belly, and attempted to strike it with one of her hind feet. The ears and horns cold. The pulse was between seventy and eighty, which is ten above the natural beat of the cow's pulse. I threw up a clyster, of above five or six quarts of warm water, with one pound of salt dissolved in it, and gave the drench I always employ on such occasions, that is, 4 drams of Barbadoes aloes, 1 dram of powdered ginger, 4 ounces of table salt, and 1 quart of water. Into the first hornful of this mixture, I put half an ounce of tincture of opium, (I now substitute for tincture of opium, 2 ounces of the anoydne carminate tincture). This was all the medicine I administered. I ordered the cow to be turned out immediately. About three or four hours afterwards she was drenched twice with whey. This made her rather sick, therefore she was turned out again, and I directed nothing more to be given. I should have observed, that the drench soon put a stop to the symptoms of gripes, but there was still great uneasiness, and evidently an obstruction in the third stomach. Soon after taking the whey, she dunged, and with her dung there was a considerable number of unchanged oats, not soft and swollen like those voided by the horse in his dung, when he masticates imperfectly, for they appeared to have undergone no change whatever. I saw her again at night. She appeared still in pain, and shivering in her hind parts; her back was drawn up, and the cow keeper considered her worse. She was not griped, however, and I was satisfied, from her appearance that the aloes and salt were then doing their work in the third stomach, and that that was the cause of her seeming not so well. I directed, therefore, that she should still be kept out, and have nothing more given her. During the night she was completely relieved, and in the morning was found grazing. I have described this one case, not only to show the method of treating it, which I think will always be found effectual, but to prove likewise the impropriety of feeding cows in this manner. In the first place, it appears to me, that oats eaten alone cannot be ruminated without great difficulty, and even supposing that they could, I have made it appear sufficiently clear, I trust, in a former paper, that grain does not promote the formation of milk, but of fat; and that in so doing, the disposition of the animal becomes changed, from that of providing for her young, to that of propagating her species. The balance then between the lactiferous and the chyliferous vessels of the fourth stomach, undergoes a change; the chyliferous vessels predominate, and the food that is taken in goes principally, and perhaps in a short time wholly, to the production of fat. The purpose, therefore, for which the oats are given must be entirely defeated, for these cows are kept solely for the dairy. I do not know whether indigestion will be a frequent consequence of this mode of feeding, as I only saw this dairy *yesterday*, for the first time; but will make a point of inquiring *to-morrow morning*, how long this mode of feeding has been adopted, and what the effect of it has been. At present I can only say, that I consider it a very wasteful plan at all events, and have no doubt I shall find it very injurious also.—Upon inquiry, I find that the feeding with oats is giving up, and that the cows are turned into a piece of grass at some distance, that they had been feed only a short time with oats, and therefore no further mischief has been done.

ESSAY V.

ON THE DISEASES OF CALVES.

I BELIEVE almost all the diseases of calves originate in the digestive system, or rather in the fourth stomach, which is the only one required when the young animal feeds on milk, provided he is fed with moderation. When a calf is intended for the butcher, making him fat expeditiously is the object sought after, but this cannot be accomplished without due attention to the *state* of the stomach. Many farmers seem to think that fattening depends merely on giving plenty of milk, but if more than a sufficient quantity is given, instead of doing good, it oppresses the stomach, and lessens the digestive power. In consequence of this, an acid is formed sometimes in such quantity, and of such strength, as to derange the bowels, and cause scouring, and not unfrequently colic, convulsions, or cramps: it is better to give too little milk at a time than too much. It is difficult, perhaps impossible, to ascertain precisely the quantity that the stomach can take with advantage, for the appetite of young animals is sometimes a fallacious guide; but if a smaller quantity is given than the stomach is capable of digesting, it is sure of being perfectly digested. If the calf is to be reared, there is great advantage in keeping him rather lean than otherwise, for he will be less liable to disease, and, when weaned, will be found to thrive much better and be hardier. Calves that are brought up by the hand, or *at the pail*, as it is termed, should have the milk given them as fresh as possible, as it is then most easily digested: when it cannot be obtained in this state, and appears to disagree with the animal, a little powdered chalk may be added. Whenever a calf becomes costive, a laxative should be immediately given, and when he scours, the following cordial will be found effectual.

Laxative for Calves.

Epsom salt	2 ounces
Carbonate of soda	½ dram
Water	4 ounces
er	½ dram

Mix.

Cordial for Calves.

Caraway seeds recently powdered	½	ounce
Ginger	½	dram
Carbonate of soda	1	dram
Water	8	ounces
Brandy or gin	1	ounce

Mix.

Arrow-root, wheat, or barley flour gruel, is a good drink for calves that appear weakly, and liable to scour. I know a dairy-man, and one of some experience, who gives a table spoonful or two of brandy in a small quantity of urine, to a scouring calf, and this generally proves effectual. He gives half a pint or more of urine alone to a calf while rearing, that happens to be rather costive and unthrifty, and always finds great advantage from it. Calves are said to be subject to dysentery, but this is nothing more, I believe, than a disordered state of the bowels, arising from inattention to those symptoms I have before noticed; that is, scouring, imperfect digestion, and costiveness. This chronic affection of the bowels is sometimes difficult of cure, and not unfrequently ends in atrophy or consumption; the only chance of cure, is in giving food in small quantity at a time, such as fine wheat flour gruel, with a little fresh milk, and sweetened with treacle or sugar. A sheltered field is the best situation for the calf in good weather, and when the weather is unfavourable he should be put into the cow barton.

ESSAY VI.

ON HYDROCEPHALUS, OR GIDDINESS IN SHEEP.

I SEND the following observations on the *hydrocephalus* in sheep, under a conviction that they are sufficiently useful to be made public. This disorder is very common in sheep, and so well known, that a description of the symptoms would be unnecessary were it not for one circumstance connected with them, that has never been noticed, though absolutely essential to the cure. The principal symptom is that of the animal turning round, generally many times, in endeavouring to move forward; especially when hurried, and in the more advanced stages of the disorder. From this, the disease has been named giddiness, gid, turnsick, &c. Sometimes the cerebellum is affected, and then the animal, instead of turning round when hurried, or in endeavouring to move forward, appears lame in the hind quarters, generally on one side only, and most commonly the *Left.* In moving forward quickly, he goes nearly straight, but the left hind quarter is so inclined as to make him appear somewhat crooked. It must now be remarked, that in turning round, the sheep generally moves on the same side, *and that the hydatid, or bladder, as it is termed, is generally on the opposite side.* The cause of his turning round is supposed to be giddiness, but it may depend also on his being blind in that eye. In the early stages of the disorder, the turning round is not so remarkable, unless the animal is hurried, but at a later period, he constantly does it in attempting to move forward, and at length becomes so completely palsied, that he falls down, and is unable to rise up again, and in that situation generally dies. It has [illegible] thought that the hydatid sometimes [illegible] on the surface of the brain: this I think is a mistake, and may have arisen from the hydatid having so far destroyed the sides of the cavity, [illegible] the ventricle of the brain, that the roof, or upper part, becomes scarcely more than the [illegible] of an inch in thickness. I have never seen [illegible] completely worn through, except once, and [illegible] the hydatid burst, and the water was discharged through the opening in the skull. The whole of the skull covering that lobe of the brain becomes extremely thin, and sometimes small holes are found in it, especially immediately behind the part where the horns are situated.[1] There is no difficulty in accounting for the pressure of the hydatid being principally directed against the skull, or rather operating on that part. The resistance of the tentorium posteriorly, and of the falciform process of the dura mater laterally, is not greater than that of the dura mater covering the superior part of the brain; but the bones underneath, where the pressure must ultimately be received, are considerably stronger. But the principal cause is, that the part which appears to be the mouth of the hydatid, is drawn in like the neck of a common bladder, and is situated in the fossa, between the corpus striatum and corpus pyramidale. From this part it enlarges upward, and its growth or distension is directed against the roof of the ventricle. I have observed that the hydatid is found also in the cerebellum, or small brain; this, I believe, is not a frequent occurrence; but when it does happen, it will produce the symptoms I have described. I have stated that in general one side or lobe of the brain only is affected, except in the last stage of the disorder, as will soon be explained; and I am also of opinion, that that side is generally the right. The same observation applies to the cerebellum, which is never affected, I believe, at the same time with the brain. "Sir

George Mackenzie and others who have written on this disorder, have described operations as cures for it, without informing their readers by what appearance they are to distinguish the affected side. Now, if the sound lobe of the brain is punctured, the animal would drop down and soon die, so that, admitting the operation to be effectual, it must be an equal chance whether it kills or cures. There is no difficulty whatever in puncturing the hydatid through the upper part of the skull, or parietal bone; and the part before mentioned, that is, behind the part where the horn grows, and where a small opening in the bone is often found, is the best part for introducing the instrument. A shoemaker's awl will answer the purpose, but a common brad-awl, made sharp at the point, and square, or triangular above, would do better. One puncture is sufficient to kill the hydatid. The fluid will not escape readily or quickly, nor will the good effect be immediately observed: only a very small quantity of fluid will be seen upon the wool after the instrument is withdrawn, so inconsiderable, indeed, that the operator might be induced to make a larger opening, but the small puncture I have described is sufficient to cure the disorder. Nothing more is to be done. The hydatid of the cerebellum is incurable. It must appear wonderful that the right side, or lobe of the brain, as well as of the cerebellum, should most commonly be the side affected. It is well known, that when the brain is oppressed on one side, the organs of sense, or motion, on the opposite one, are always affected; and from this cause it is that the giddy sheep is almost always blind in the left eye, and turns round on the left side. It appears to be a general law in the animal economy, that where there are duplicates of parts, the left side shall be affected in preference to the right, and it is a curious circumstance that the right lobe of the brain is generally affected in hydrocephalus, but still in conformity with this law of nature. Thus it is that the left eye is always affected, and when the disorder has proceeded so far as to disturb the functions of the brain generally, the animal becomes paralytic, first on the left side, and if it live long enough, at length it becomes entirely so. On examining the brain of a giddy sheep, nearly the whole lobe will be found destroyed: after drawing out the hydatid, a cavity is left capable of containing from two to three ounces of water. But notwithstanding this extensive injury, for all the surface of this cavity appears diseased and ulcerated, the sheep feeds well, and acquires fat, until the disorder is very far advanced, and then probably his leanness may depend as much, or more, on want of food, as on derangement of the digestive organs. It is a wonderful circumstance, however, and may well excite our admiration and gratitude, that the disorder is not permitted to destroy the animal until the flesh and the fleece have arrived at that perfection which is necessary for the use of man. The alarming prevalence of this disorder, as well as of diseases of the liver and lungs, appears to be in conformity to the general laws of nature. The soil and situation in which animals are originally placed is that which is most fit for them, and if they are removed, or if an attempt is made by crossing the breed, as it is termed, to improve the works of the creator of the universe, it will, sooner or later, be found injurious, or even destructive. If a person of thirty-five or forty years' experience in sheep-husbandry will compare the prevalence of diseases at the present period, among these animals, to what it was thirty years ago, I am much mistaken if he does not find that they have been gradually and progressively increasing since that period. What other inference can be drawn from this circumstance, than that by endeavouring to improve the breed, an increase of constitutional debility, and hereditary diseases has been produced?

Since writing this essay, I have found, from dissection, that common hydrocephalus is very frequent in sheep, and produces symptoms which are commonly named *goggles*, and are different from those produced by an hydatid in the lateral ventricle. In goggles, or common hydrocephalus, the water, as it accumulates, descends through the iter ad quintum ventriculum (for in quadrupeds the olfactory nerves are cavities, or ventricles), into the fifth ventricle, and from thence into the sheath of the medulla oblongata, and even to that of the spinal cord, in which case it often escapes upon cutting off the animal's head. In goggles, the symptoms are more serious than in giddiness, and more speedily destroy the animal. It is always, or most commonly attended by some degree of paralysis and lameness in the fore or hind parts, generally of the left side, and an inclination of the head to one side. Like the gid, or hydrocephalus from hydatids, it is hereditary, and affords a striking proof of the degeneracy of the race, in consequence, I believe, of the attempts that are made to improve the breed, by crossing and removing them from their native situation.

In hydrocephalus from giddiness a sheep may live a considerable time, and so he may in common hydrocephalus, but this last is seldom discovered until the disorder has arrived at some height. I lately opened the head of an ewe belonging to General Bathurst, affected with common hydrocephalus, in which nearly all the water had descended into the sheath of the spinal cord, and escaped upon cutting off the head. The mischief done here was principally in the fifth ventricle, where a considerable depression was observable. The Schneiderian membrane was highly inflamed. A large hydatid, containing about four or five ounces of fluid, was attached exteriorly to the colon.

It is probable, I think, that the water found in the ventricles of the brain in common hydrocephalus, or goggles, was originally contained in an hydatid, or bladder; and I have seen a case where the hydatid appeared to have forced its way through the septum lucidum into the opposite ventricle; in this way, perhaps the bladder is sometimes burst, and common hydrocephalus produced. I have been informed that there are shepherds in Dorsetshire who cure giddy sheep without difficulty, merely by puncturing the hydatid, and applying afterwards a pitch plaister. I have several times taken out the hydatid, but always, I believe, at too late a period to do good. The sheep have lived after the operation, but did not appear to be relieved by it; they were therefore killed, and given to the poor. On examining the head of a giddy sheep, a soft part or spot will be found on the skull, just behind the part where the horn grows; and if the sheep is blind in one eye, which is always the case in the early stage of hydrocephalus, the hydatid will be found on the opposite side. When the soft spot I have described is felt, it may be carefully opened with the point of a penknife; part of the hydatid will then force its way up, and appear as a small bladder protruded through the opening that has been made. This bladder may then be opened, and the water will gradually flow off. If the bladder is then carefully laid hold of with a pair of forceps, it may gradually be drawn out, but this has never answered, and I think it a better plan merely to open it. The shepherd's plan is probably still better, which, I believe, is merely to puncture the skull, at the soft part, with a straight awl, not longer than half an inch.

I have lately attended some lambs that were attacked with palsy of the hind parts, either partial, or total. I examined one of them, and found the in[illegible] parts tolerably healthy, and the brain free from hydatids; but the spinal marrow and nerves going from it, had a weakly appearance, especially at the loins. There appeared, also, a tendency to form hydatids within the spinal canal, or the cellular texture appeared inflated and watery. This, upon inquiry, appeared to have been occasioned by the weakly state of the ewes in consequence of hard keep, and eating very bad hay.

ESSAY VII.

A GENERAL DESCRIPTION OF THE DISEASES OF CATTLE.

It may be observed, that in the various papers I have had the honour to communicate to the Bath and West of England Agricultural Society, the medicines I have prescribed are few and simple; but I will venture to assert, that upon a fair trial, they will be found sufficient to cure all the internal disorders of cattle that are curable. This may be thought a very bold assertion, especially by those who are acquainted with the strange heterogeneous mixtures employed by cattle doctors, and the absurd and expensive recipes contained in books on cattle medicine. It is, nevertheless, true, and easily demonstrated, by giving the medicines I have recommended a trial. The internal disorders of cattle may, with propriety, be divided into two classes. First, those of the organs subservient to digestion and chylification; secondly, those of the sanguiferous system, or blood vessels. The former may be cured by means of the three simple prescriptions I have alluded to; the latter by the fleam. In both, however, the animal's diet is an object of the greatest importance: for to what purpose would it be to remove the accumulated matter which occasions the disordered state of the digestive organs, were the animal still kept on the same diet which produced it; or what benefit could be expected from relieving the vital organs when oppressed by a redundancy of blood, if the animal were afterwards allowed to feed at pleasure, and form as much blood again, in a short time, as that which had been drawn off?

In the treatment of the disorders of cattle, attention to feeding is an essential object, and is equally, or more important, as a means of prevention; for it is not too much to assert, that nearly all their disorders originate in improper management as to feeding. A morbid susceptibility, or a pre-disposition to disease, may be propagated by negligence in breeding, and may be produced by taking animals from their native soil and climate, and placing them in colder situations; for cold and moisture are often powerful agents in lessening the vital power, and especially that of the digestive organs. Still the principal, and often the immediate cause of their disorders is improper feeding. The most fruitful source of disease in cattle, and especially milch cows, is bad hay,* and even such as is, by many, considered tolerably good. The fibrous parts of such hay gradually accumulate between the leaves of the third, or foliated stomach; here they are compressed from time to time, and become matted together, and being detained by the numerous papillæ, with which the surface of the leaves is covered, produces, at length, a morbid condition of the fourth stomach, and often of the bowels also. The most common symptom of this state of the digestive organs, is named the *yellows*, from the milk in one of the quarters of the udder becoming of a yellow colour, and stringy, as it is termed, that is, mixed with small filamentous coagula, or curds, often offensive in smell and taste, and sometimes streaked with blood. The acrimony of the milk causes a swelling and hardening of the quarter; and unless it is drawn off several times a day, it often so inflames the cellular texture of the udder, as to terminate in suppuration, and an obliteration of the receptacle, or quarter, as it is commonly named. The opening drench never fails of curing this disorder, if given in season, and one dose is sufficient; after taking it the animal must be kept at grass, as that food, and the exercise used in obtaining it, is essential to her recovery. In higher degrees of this disorder, where the cow ceases to ruminate, or chew the cud, where the appetite goes off, and the milk is almost entirely lost in all the quarters, the drench should be assisted by whey, as directed in the treatment of red water; and when scouring succeeds, the cordial astringent drench must be given, as directed in the treatment of scouring or scantering. The swollen udder requires only the application of sweet oil, or foot oil. When cattle are turned suddenly into good pasture, they sometimes fill the rumen or paunch, so hastily, and so distend it, that it is rendered incapable of returning the food to the mouth for rumination. Fermentation then takes place, by which much air is generated, and the distention soon becomes such as to suffocate the animal, unless relief is afforded by introducing the instrument named a probang, and letting out the confined air. As soon as this has been done the opening drench must be given, and the animal turned into a bare pasture, where she must be for some time attended, and have the fermenting food removed from the mouth as it is thrown up; without this precaution it may be ruminated, and again swallowed, and the third and fourth stomachs so filled with it, as to produce the flatulent cholic, and a fatal inflammation of the stomach and bowels, from excessive distention by the air, which would be generated; for in those cavities, air could not escape upwards in consequence of their valvular structure. Should this fresh disorder, through negligence, be permitted to happen, the opening drench is still the best remedy that can be employed. Another method is sometimes made use of for relieving an animal in this disorder, which is commonly named *hoven*, *blown*, or *blasted*, that is, a sharp knife is plunged through the left side into the distended rumen, or first stomach. The part where it is most prominent is chosen, namely, between the last rib and the hip bone; and always on the left side. The air being thus completely let out, the wound is closed by a pitch plaster, and the animal turned into a bare pasture, where it may get plenty of exercise and little food; that is, after the fermenting food has been removed from the mouth as before described. This method, however, is eventually injurious, and must be superseded by that of introducing a probang, and letting out the confined air by the mouth,—a method first proposed by Doctor Munroe. The wound in the rumen, as it heals, always adheres to the side, and thus a regular contraction of the cavity is ever afterwards prevented, and rumination thereby rendered difficult and imperfect.* Sometimes when an animal is turned into good grass, especially about the month of August and September, when the grass is high and abundant, from having been well watered, they eat a great deal during both the day and the night, but not so much as to hinder rumination. Thus they gradually fill all the stomachs, and towards morning become so oppressed, that they lie down on the cold grass, which is, perhaps, wet, or covered with hoar frost. Digestion is thus put a stop to, and the animal often suffocated by the excessive distention of the stomachs. In this disorder, which is commonly called fog sickness, the probang must be introduced, and the opening drench given. The animal must then be made to move, if possible, and the food that is thrown up into the mouth must be removed. Here, also, a bare pasture is necessary afterwards; no other medicine is required; but a free access to water is necessary to soften and carry off the accumulated food, and when this has been accomplished, the cordial astringent drench may be necessary, morning and evening, for two or three days, to restore the tone of the injured stomachs and bowels. It is probable, however, that this would be more effectually, though more slowly accomplished, by keeping the animal in a bare pasture. Sometimes when an animal is kept in rich pasture during the month of June, the appetite is powerful, and the digestion quick and perfect, and thus, in a short time, so much rich blood is formed as to exceed the capacity of the blood vessels, and then inflammation is produced in some vital organ, and nothing but the most copious depletion of the blood vessels will save the animal's life. The lungs are the part most likely to suffer, and next, the brain and the kidneys; producing mad staggers, or the inflammatory red water; and in steers or heifers, or in yearlings, the quarter ill is thus produced. In all cases of internal inflammation the animal appears stupid and heavy; the breathing is disturbed; the nose and upper lip hot and dry; the horns hot, especially at the roots, and the vessels of the eye distended. The pulse rises to above 100, and the appetite is usually lost. All these symptoms quickly increase, and unless the animal is properly treated, terminate fatally. Bleeding is the essential remedy, and must be performed as early as possible. The quantity of blood drawn should not be regarded, but the effect which is produced by it, that is, faintness: this gradually ceases, and after a few hours he appears relieved and cheerful, and often desirous of food. But this must be given cautiously; the barest pasture is the best place for him; but he may be allowed now and then a quart or two of fresh whey, which will serve to unload the stomachs and bowels. This remedy (bleeding to faintness,) always succeeds perfectly if employed in season, and followed by a suitable diet. In the month of September and October scouring often takes place, especially in animals predisposed to the disorder by hereditary weakness, frequent calving, weakness of the stomachs and bowels, gradually induced from several winters' feeding on bad hay. Animals that have been taken from their native soil and climate, are also subject to this disorder, as well as remarkably good milkers, and this is the period when scouring generally commences. In this case the cordial astringent drench must be given every morning and evening, as directed in the Compendium, but must always be preceded by the opening drench, at whatever period the disease may occur. This remedy, I have reason to believe, will always succeed, if employed in season, and if the time of the year will admit of the animal being kept at grass. In very cold and wet weather, when shelter becomes necessary, intervals of fine weather must be taken advantage of, for some grass and some exercise are essential to recovery; and when grass is deficient, either in quantity or quality, the best food is *good* hay, in moderate quantity, and mashes of *good fresh* bran with a little ground malt. A handful of wheat flour also may be stirred into each pail of water. In this way the animal may be restored and strengthened; and when grass becomes nourishing, and the weather favourable, the green fields will effectually recover her.* These are all the internal disorders of cattle, except the contagious epidemic, named murrain, or pest, and the epidemic catarrh, named distemper, or influenza. These are inflammatory disorders of the highest degree, and if curable, as the latter always is, can be cured only by the most copious and early bleeding. An absurd apprehension of fatal debility, and of the putrid nature of the disorder, must never prevent this remedy from being employed with boldness, nor should the animal ever be taken from grass, and the open fields, as is often done in the epidemic catarrh. Contagion, however, must always be guarded against with the utmost care. Tonics and stimulants are poisons in those disorders, and bleeding and grass are the only remedies ever required.—I have now endeavoured to give a simple, but comprehensive view of the internal disorders of cattle, and such as may lead to their prevention. I indulge a hope that the proprietors of cattle may be led by this, and the other essays I have written, to reflect upon the subject, and give a fair trial to the curative and preventive measures I have proposed. It should be recollected, however, that the success of the remedies I have suggested can be insured only by an early and careful application. Disorders are often neglected until they become incurable, and then the most absurd and expensive drenches are frequently had recourse to. In Downing's book on cattle medicine, a pint of port wine and a quart of strong beer are prescribed for one dose, as a vehicle for grains of paradise and other drugs; and in another receipt a quart of port wine is prescribed for one dose. Sometimes a choice is offered the reader between beer and urine, as if their properties were similar. The cordial astringent drench, including the beer, will cost about four pence; the opening drench is more expensive, and costs from a shilling to eighteen pence. But one is always sufficient. The strong cordials given to cattle, or even the beer in which they are given, which is seldom less than a quart, may afford relief in some disorders, but they certainly weaken the stomach, and thereby increase the tendency to disease. The weaker the cordial the better, provided it be strong enough to produce the desired effect, and then it may be so repeated as, with due attention to diet, to render that effect more durable, and even permanent. In scouring cattle I have not yet known the cordial astringent fail. Proprietors would find great advantage in directing the medical treatment of their stock themselves, and still more were they to attend carefully to preventive measures. Were the practice to become general of making hay in the early part of June, when the grass is in flower, it would go a great way in preventing the diseases of horses and cattle. In the former animal the only other conditions required for the preservation of health would be to give such hay with moderation, to work him *fairly*, and afford him such treatment as he has a just claim to; for all his disorders are occasioned by hard work, by excessive exertion, and by feeding upon hay. The crop, when cut early, may be less in quantity, but this is abundantly compensated for by its superior quality, and the after grass would be infinitely better.

---

* Unwholesome water is often a cause of disease in cattle, especially milch cows. See Preface.

---

* I have lately been informed that hoven or blasted cattle have been quickly relieved by giving four ounces of carbonate of soda, half a pint of castor oil, and a pint of tar. The person who gave me this information, says, he has never known this fail.

---

* I have lately been informed that many scouring cows have been cured by giving twice or once a day a drench made by boiling three or four sheets of large common writing paper in three pints of skimmed milk, until reduced to a pulp. One pint of this is a dose; and my correspondent adds, that he has never known it fail. The cow is fed on the sweetest hay, and turned out for exercise when the weather is fine.

ESSAY VIII.

ON THE DISEASE TERMED MINDERING.

In the last paper I had the honour to send to the Bath Agricultural Society, I thought I had described all the disorders of cattle, with the means of preventing and curing them. This, however, was a mistake; for a very serious disease has at times occured in the vicinity of Mendip, and in those parts where the lead mines are worked, which has proved very destructive, not only to cattle, but also to horses, to dogs, and even to poultry. This disorder is termed *mindering* by the inhabitants, and animals so affected are said to be *mindered*. I have been informed by a respectable farmer of Wookey, who appears to be well acquainted with the disorder, that he has never known sheep affected by it. After heavy rains, the brook which runs through the meadows of Wookey, overflows its banks, and covers some of the adjacent lands, and these, after the water has retired, have their grass so impregnated with lead, as to be rendered poisonous; and it has been observed, that those animals who feed close to the stream, or pick up the long grass on the margin of the water, are most quickly affected: it is said, that the water also is poisonous. It seems probable, that the poison consists of the light powdery oxide of lead, which is sublimed in immense quantities in smelting the ore, and is carried through the atmosphere to a considerable distance, and deposited very extensively on the surface of the hill. During a heavy rain, this oxide of lead is washed down in great quantities into the meadows, and the brooks, and gradually subsiding, imparts that poisonous quality to the grass that has done so much injury. A dog has been known to be *mindered*, after picking a bone in a meadow that had been thus poisoned. So far does the injurious effects of the lead mines extend, that the meadows near Wookey hole have been thus poisoned, though the nearest mine from which the metal could have been derived, was situated near Priddy, a distance, I believe, of several miles. The disorder sometimes occurs on different parts of the hill, and especially near the smelting places; from which it has been thought that the deleterious matter consists of the lead ore itself, in a state of fine powder. But it is known to impart a sweet taste to the grass, which the lead ore, however finely powdered, has not the power of doing; it must, therefore, I think, be an oxide of lead, or some saline compound; but how the latter can be formed, it may be difficult to explain. If the lead ore contains sulphur, then a sulphate of lead may be sublimed, and diffused to some distance, but I think it more probable that it consists of a light powdery oxide of lead, or a carbonate or super-carbonate. Sometimes the disorder has occurred close to the smelting places. One farmer, the proprietor of a mine, lost fifteen head of cattle by it, that broke down a fence round the smelting place one night, and eat freely of the grass round the banks. An intelligent and respectable farmer, of Wookey hole, also lost eight head of cattle at one time, in consequence of his meadows having been overflowed. This farmer, Mr. Baker, is the same whose sheep I was the means of preserving last summer.

The symptoms of *mindering* take place in different degrees, according to the quantity of poison that has been eaten. Nine of the fifteen head of cattle before mentioned, that were lost by one farmer, died within a week after the attack; the others lived longer. Sometimes they go on many weeks with the disorder, and sometimes even months; but it almost always eventually proves fatal. The most urgent and formidable symptom of the disorder is great difficulty of breathing, and such loud wheezing, as may be heard at some distance. So great is the difficulty of breathing in some cases, that the animal falls down and froths at the mouth, and appears to be near suffocation, which sometimes happens. More commonly the attack is less violent, and though the difficulty of breathing and wheezing are considerable, he continues on his legs, but appears in danger of suffocation. Thus he goes on for several days, or a week, perhaps longer, and then dies apparently from inflammation of the lungs. Sometimes the disease assumes a different appearance, is gradual in its attack, and takes the form of epilepsy. The animal is attacked with fits, which gradually become more frequent and of longer duration. He loses his appetite; becomes obstinately costive; the discharge of urine diminishes, and at length ceases altogether: thus he gradually pines away and dies in a wretched condition. Thus the disorder, named mindering, attacks in different degrees and somewhat different forms, and this variety seems to depend upon the manner in which the poison is received. When large quantity of this oxide or carbonate of lead has been deposited on the grass, the animal takes in a considerable dose at once; and such an impression is made on the nerves of the stomach, as prevents for a time the absorption of the poison, and so affects those muscles of the larynx by which the rima glottidis is kept open, as to paralize them in a certain degree; this explains the loud and violent wheezing, as well as the difficulty of breathing that takes place. This effect is sometimes so considerable, as to cause suffocation in a short time: at others, the quantity of lead taken into the stomach being smaller, the effect is not so considerable; but the difficulty of breathing, though not so great as to cause suffocation, and destroy the animal in a short time, is such as to cause an effusion of bloody water into the chest, the pericardium, and the ventricles of the brain, and in that manner produce a fatal disorder. When a very small quantity only of the poisonous oxide has been deposited, and only a small portion is taken into the stomach, the effect is somewhat different. In this case, the lead is gradually absorbed by the lacteals, and conveyed into the circulation. The impression made on the stomach is inconsiderable, and the symptoms have not at first a formidable appearance; but such is the nature of this poison when mixed with the blood, that though often slow in its operation, it is always ultimately fatal in its effect; for it is not expelled like the other metallic oxides, such as mercury; by bringing on an increased action of the vascular system, but paralizes all the emunctories, and even the heart itself. The principal symptom produced in this case, is epilepsy, or fits, with which the animal may be affected from time to time, and go on gradually declining for many weeks, or even two or three months; but the fits at length become more frequent and violent, and the animal dies in a wretched condition. From the information I have collected, and especially from the favourable termination of two cases, in which I have reason to believe the efficient ingredient in the drenches employed was salt, I think it probable that the disorders may be cured by giving the animal as early as possible a solution of four ounces of common salt in a quart of water, and repeating it every fourth hour, until the poisoned food is completely expelled from the stomach and bowels. The effect of the salt may be promoted perhaps by clysters of salt and water; and whenever the symptoms will admit of it, the animal should be kept constantly in motion. In cases where the lead is swallowed in small quantity, and so slowly as to be absorbed by the lacteals, and impregnate the blood, there is no chance, I think, of cure. There are no means known by which this poison can be expelled from the blood, when once it is thoroughly impregnated with it. I have now given the best account I have been able to collect of this fatal disorder, which would have been more satisfactory to myself, had it been the result of my own observation and experience.

THE END.